

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN JOSE DIVISION

SENSOR ELECTRONIC TECHNOLOGY,  
INC.,

Plaintiff,

v.

BOLB, INC. and QUANTUM EGG, INC.,

Defendants.

Case No. 18-CV-05194-LHK

**ORDER CONSTRUING CLAIM  
TERMS OF U.S. PATENT NOS.  
9,801,965; 9,966,496; 8,633,468;  
9,660,133; AND 9,042,420**

Plaintiff Sensor Electronic Technology, Inc. brings this action for patent infringement against Defendants Bolb, Inc. and Quantum Egg, Inc. (collectively, “Defendants”). The parties seek construction of ten claim terms in the following five patents that Plaintiff accuses Defendants of infringing: (1) U.S. Patent Nos. 9,801,965 (“the ’965 Patent”); (2) 9,966,496 (“the ’496 Patent”); (3) 8,633,468 (“the ’468 Patent”); (4) 9,660,133 (“the ’133 Patent”); and (5) 9,042,420 (“the ’420 Patent”) (collectively, the “claim construction Patents”). Of note, Plaintiff also accuses Defendants of infringing U.S. Patent No. 8,552,562 (“the ’562 Patent”). However, the parties do not seek claim construction for the ’562 Patent.

Having considered the parties’ submissions, the relevant law, the record in this case, and

the parties’ arguments at the July 25, 2019 claim construction hearing, the Court construes the claim terms in the ’965 Patent, the ’496 Patent, the ’468 Patent, the ’133 Patent, and the ’420 Patent as follows.

## **I. BACKGROUND**

### **A. Background**

The ’965 Patent is titled “Ultraviolet Disinfection Case.” It was filed on April 14, 2015, and issued on October 31, 2017.

The ’496 Patent is titled “Light Emitting Heterostructure with Partially Relaxed Semiconductor Layer.” It was filed on April 12, 2016, and issued on May 8, 2018.

The ’468 Patent is titled ‘Light Emitting Device with Dislocation Bending Structure.” It was filed on February 10, 2012, and issued on January 21, 2014.

The ’133 Patent is titled “Group III Nitride Heterostructure for Optoelectronic Device.” It was filed on September 23, 2014, and issued on May 23, 2017.

The ’420 Patent is titled “Device with Transparent and Higher Conductive Regions in Lateral Cross Section of Semiconductor Layer.” It was filed on November 3, 2014, and issued on May 26, 2015.

The Court’s overview of each patent immediately precedes the analyses of that patent’s claim terms in the Discussion section *infra*.

### **B. Procedural History**

On August 24, 2018, Plaintiff filed a complaint alleging that Defendants infringed Plaintiff’s patents. ECF No. 1. Specifically, Plaintiff claimed that Defendants infringed the ’562 Patent as well as the five claim construction Patents: the ’965, ’496, ’468, ’133, and ’420 Patents. *Id.* at ¶¶ 18-62. On October 30, 2018, Defendants Bolb, Inc. and Quantum Egg, Inc. separately answered Plaintiff’s complaint. ECF Nos. 26-27.

On March 29, 2019, the parties filed a joint claim construction statement. ECF No. 55. On May 14, 2019, Plaintiff filed an opening claim construction brief. ECF No. 58 (“Opening Br.”).

On May 28, 2019, Defendants jointly filed a responsive claim construction brief. ECF No. 60 (“Resp. Br.”). On June 4, 2019, Plaintiff filed a reply claim construction brief. ECF No. 63 (“Reply”). The Court held a claim construction hearing on July 25, 2019. ECF No. 66.

## II. LEGAL STANDARD

### A. Claim Construction

The Court construes patent claims as a matter of law based on the relevant intrinsic and extrinsic evidence. *See Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272 (Fed. Cir. 2014) (en banc); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). “Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim.” *Phillips*, 415 F.3d at 1316 (internal quotation marks and citation omitted). Accordingly, a claim should be construed in a manner that “stays true to the claim language and most naturally aligns with the patent’s description of the invention.” *Id.*

In construing claim terms, a court looks first to the claims themselves, for “[i]t is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Id.* at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). Generally, the words of a claim should be given their “ordinary and customary meaning,” which is “the meaning that the term[s] would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1312-13. In some instances, the ordinary meaning to a person of skill in the art is clear, and claim construction may involve “little more than the application of the widely accepted meaning of commonly understood words.” *Id.* at 1314.

In many cases, however, the meaning of a term to a person skilled in the art will not be readily apparent, and a court must look to other sources to determine the term’s meaning. *See id.* Under these circumstances, a court should consider the context in which the term is used in an asserted claim or in related claims and bear in mind that “the person of ordinary skill in the art is

deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* at 1313. The specification ““is always highly relevant”” and “[u]sually . . . dispositive; it is the single best guide to the meaning of a disputed term.”” *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Indeed, “the only meaning that matters in claim construction is the meaning in the context of the patent.” *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1363 (Fed. Cir. 2016). Where the specification reveals that the patentee has given a special definition to a claim term that differs from the meaning it would ordinarily possess, “the inventor’s lexicography governs.” *Id.* at 1316. Likewise, where the specification reveals an intentional disclaimer or disavowal of claim scope by the inventor, the inventor’s intention as revealed through the specification is dispositive. *Id.*

In addition to the specification, a court may also consider the patent’s prosecution history, which consists of the complete record of proceedings before the United States Patent and Trademark Office (“PTO”) and includes the cited prior art references. The prosecution history “can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Id.* at 1317.

A court is also authorized to consider extrinsic evidence in construing claims, such as “expert and inventor testimony, dictionaries, and learned treatises.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). Expert testimony may be particularly useful in “[providing] background on the technology at issue, . . . explain[ing] how an invention works, . . . ensur[ing] that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or . . . establish[ing] that a particular term in the patent or the prior art has a particular meaning in the pertinent field.” *Phillips*, 415 F.3d at 1318. Although a court may consider evidence extrinsic to the patent and prosecution history, such evidence is considered “less significant than the intrinsic record” and

“less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.* at 1317-18 (internal quotation marks and citations omitted). Thus, while extrinsic evidence may be useful in claim construction, ultimately “it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.* at 1319. Any expert testimony “that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history” will be significantly discounted. *Id.* at 1318 (internal quotation marks and citation omitted). Finally, while the specification may describe a preferred embodiment, the claims are not necessarily limited only to that embodiment. *Id.* at 1323; *see also Prima Tek II, L.L.C. v. Polypap, S.A.R.L.*, 318 F.3d 1143, 1151 (Fed. Cir. 2003) (“The general rule, of course, is that claims of a patent are not limited to the preferred embodiment, unless by their own language.”).

#### **B. Indefiniteness**

Under 35 U.S.C. § 112(b),<sup>1</sup> a patent must “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the] invention.” 35 U.S.C. § 112(b) includes what is commonly called the “definiteness” requirement. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 902 (2014). In *Nautilus*, the United States Supreme Court held that “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Id.* at 901. As the Court observed, § 112(b) “entails a ‘delicate balance.’” *Id.* at 909 (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002)). “On the one hand, the definiteness

---

<sup>1</sup> The Court cites the version of 35 U.S.C. § 112 that took effect on September 16, 2012, pursuant to the America Invents Act (“AIA”). *In re Bimeda Research & Dev. Ltd.*, 724 F.3d 1320, 1323 n. 3 (Fed. Cir. 2013). Patents filed before that date are subject to the pre-AIA 35 U.S.C. § 112, whereas patents filed after that date are subject to the AIA version of § 112 that took effect on September 16, 2012. *Id.* The instant case involves patents filed both before and after September 16, 2012. Nevertheless, the “AIA did not make any substantive change to § 112; therefore, the analysis is identical” for pre-AIA and post-AIA patents. *In re Maatita*, 900 F.3d 1369, 1372 n.1 (Fed. Cir. 2018).

requirement must take into account the inherent limitations of language.” *Id.* (citing *Festo*, 535 U.S. at 731). “At the same time, a patent must be precise enough to afford clear notice of what is claimed, thereby ‘appris[ing] the public of what is still open to them.’” *Id.* (quoting *Markman*, 517 U.S. at 373). Thus, “the certainty which the law requires in patents is not greater than is reasonable, having regard to their subject-matter.” *Id.* at 910 (quoting *Minerals Separation v. Hyde*, 242 U.S. 261, 270 (1916)).

The Federal Circuit applied the *Nautilus* standard in *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364 (Fed. Cir. 2014). The case involved two patents which covered an “attention manager for occupying the peripheral attention of a person in the vicinity of a display device.” *Id.* at 1366. In one embodiment, the patents involved placing advertising on websites in areas surrounding the principal content of the webpage, for example in the margins of an article. Several of the asserted claims included a limitation that the advertisements (“content data”) would be displayed “in an unobtrusive manner that does not distract a user of the display device.” *Id.* at 1368. The district court found that the terms “in an unobtrusive manner” and “does not distract the user” were indefinite, and the Federal Circuit affirmed. *Id.* at 1368-69. The Federal Circuit found that the “‘unobtrusive manner’ phrase is highly subjective and, on its face, provides little guidance to one of skill in the art” and “offers no objective indication of the manner in which content images are to be displayed to the user.” *Id.* at 1371. Accordingly, the Court looked to the written description for guidance. The Court concluded that the specification lacked adequate guidance to give the phrase a “reasonably clear and exclusive definition, leaving the facially subjective claim language without an objective boundary.” *Id.* at 1373. Accordingly, the claims containing the “unobtrusive manner” phrase were indefinite.

In applying the *Nautilus* standard, the Federal Circuit has cautioned that “the dispositive question in an indefiniteness inquiry is whether the ‘claims,’ not particular claim terms” fail the *Nautilus* test. *Cox Commc’ns, Inc. v. Sprint Commc’n Co. LP*, 838 F.3d 1224, 1231 (Fed. Cir. 2016). For that reason, a claim term that “does not discernably alter the scope of the claims” may

fail to serve as a source of indefiniteness. *Id.* For example, in *Cox Communications*, the Federal Circuit determined that the term “processing system” did not render the method claims at issue indefinite because “the point of novelty resides with the steps of these methods, not with the machine that performs them.” *Id.* at 1229. Thus, the court reasoned, “[i]f ‘processing system’ does not discernably alter the scope of the claims, it is difficult to see how this term would prevent the claims . . . from serving their notice function under [§ 112(b)].” *Id.*

The Court therefore reviews the claims, specification, and prosecution history to determine whether the claims “inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 901. Indefiniteness renders a claim invalid, and must be shown by clear and convincing evidence. *See Halliburton Energy Servs. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008); *cf. Nautilus*, 572 U.S. at 912 n.10.

### III. DISCUSSION

Below, the Court discusses the following patents in the following order: the ’965 Patent; the ’496 Patent; the ’468 Patent; the ’133 Patent; and the ’420 Patent.

#### A. The ’965 Patent

##### 1. Overview of the ’965 Patent

The ’965 Patent generally relates to “disinfecting flowable products using ultraviolet radiation.” ’965 Patent at 3:44-45. As defined by the Patent, “flowable products” include “liquids, suspensions, creams, colloids, emulsions, powders, and/or the like.” *Id.* at 3:45-47. Furthermore, the specification states that the definition of “flowable products” also includes “accessories or ancillary products used in conjunction” with the “flowable products” disclosed in the previous sentence. *Id.* at 3:48-50. Such “accessories” or “ancillary products” include “containers (e.g., cases), covers (e.g., caps), brushes, applicators, and/or the like.” *Id.* at 3:50-52.

**FIG. 2B**

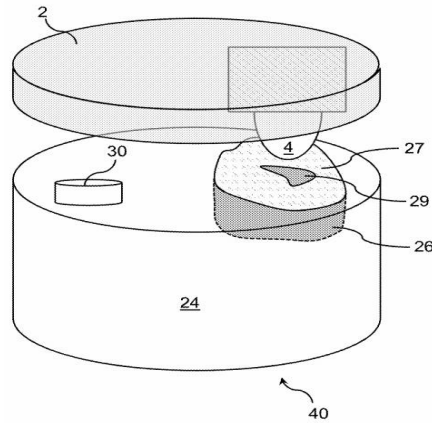


Fig. 2B of the '965 Patent exemplifies the disclosed invention. Fig. 2B shows an example of a container (item 40) that can “store a flowable product . . . for which disinfection is desired.” *Id.* at 6:57-59. The container (item 40) comprises two compartments, the first of which is item 24, which can store a larger portion of a flowable product than the second compartment (item 26). *Id.* at 6:61-65. A pumping device (item 30) can be engaged to transfer flowable product from the larger first compartment (item 24) into the smaller second compartment (item 26). *Id.* The second compartment (item 26) can have a cover (item 27) that would allow ultraviolet radiation to pass through the cover (item 27) and into the second compartment (item 26). *Id.* at 7:1-2, 28-32. The cover (item 27) to the second compartment (item 26) can also be porous so that flowable product can be extracted from the second compartment (item 26), such as by applying pressure to the second compartment (item 26). *Id.* at 7:11-14.

A cap (item 2) can be used to enclose the volume of the container (item 40) and be attached to the container (item 40) using, for instance, a screw thread. *Id.* at Abstract, 7:22-23, 2:21-25 (disclosing a “case configured to enclose a volume corresponding to a flowable product, wherein the flowable product can be accessed when the case is open” and “a cover configured to selectively close and open the case”). Ultraviolet radiation sources (item 4) can be located onto the cap (item 2) such that when the cap (item 2) is securely attached to the container (item 40), the ultraviolet radiation sources (item 4) are positioned such that the ultraviolet radiation is directed at the ultraviolet transparent cover (item 27) to the second compartment (item 26). *Id.* at 7:23-32. As



a result, ultraviolet radiation would pass through the cover (item 27) into the second compartment (item 26), and would reach any flowable product present in the second compartment (item 26). *Id.* at 7:28-32. Therefore, the ultraviolet radiation source (item 4) would disinfect the flowable product in the second compartment (item 26) and the second compartment (item 26). *Id.* at 32-35.

The parties request construction of two terms: (1) “cover” (found in claim 1), and (2) “second compartment defines the volume” (found in claim 2). Below, the Court addresses each claim term in turn.

## 2. “cover”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning	“a lid or cap that seals the case when closed or attached”

The term “cover” appears in claim 1 of the ’965 Patent. Claim 1 of the ’965 Patent recites:

### 1. An apparatus comprising:

an ultraviolet radiation containing case configured to enclose a volume corresponding to a flowable liquid product, wherein the flowable liquid product can be accessed when the case is open;

a **cover** configured to selectively close and open the case;

at least one ultraviolet radiation source mounted on at least one of: the case or the **cover**, the at least one ultraviolet radiation source comprising an ultraviolet light emitting diode configured to generate ultraviolet radiation for disinfecting the volume corresponding to the flowable liquid product; and

a sensor configured to cause the at least one ultraviolet radiation source to turn off when the volume is not closed.

’965 Patent at Cl. 1 (emphasis added).

Plaintiff argues that the claim term “cover” should be given its plain and ordinary meaning. Opening Br. at 4. Defendants argue that “cover” should mean “a lid or cap that seals the case when closed or attached.” Resp. Br. at 2. For the reasons discussed below, the Court mostly adopts Defendants’ proposed construction, though the Court’s construction omits any mention of a “lid.”

The Court is well within its discretion to eschew the litigants’ proposed constructions. The

Federal Circuit has held that the “duty of a trial judge is to determine the meaning of the claims at issue, and to instruct the jury accordingly. In the exercise of that duty, the trial judge has an independent obligation to determine the meaning of the claims, *notwithstanding the views asserted by the adversary parties.*” *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995) (internal citation omitted) (emphasis added); *see also Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1376 (Fed. Cir. 2017) (holding that courts may “adopt a definition not proposed by either party that best fits with the claim language and specification”). For instance, the *Glaxo Grp. LTD v. Teva Pharm. USA, Inc.* court stated that the “Court will not adopt [the defendant’s] proposed construction. However, the Court will also not adopt [the patentee’s] proposed construction.” 2009 WL 1220544, at \*2 (D. Del. Apr. 30, 2009); *see also Takeda Pharm. Co. v. Sun Pharma Global FZE*, 2016 WL 9229318, at \*5 (D.N.J. May 16, 2016) (construing claim term in a way that neither side proposed); *P3 Int’l Corp. v. Unique Products, Mfg. Ltd.*, 2009 WL 1424178, at \*8-9 (S.D.N.Y. May 21, 2009) (same); *Retractable Techs., Inc. v. Becton Dickinson & Co.*, 2009 WL 837887, at \*17 (E.D. Tex. Jan. 20, 2009) (same), *aff’d in part and rev’d in part on other grounds*, 653 F.3d 1296 (Fed. Cir. 2011); *Negotiated Data Solutions, LLC v. Dell, Inc.*, 596 F. Supp. 2d 949, 974-75 (E.D. Tex. 2009) (same).

Thus, the Court’s construction of the claim term “cover” is “a cap that seals the case when closed or attached.” Below, the Court addresses why the Court’s construction is correct. As always, claim construction begins with an examination of the intrinsic evidence, *Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1370 (Fed. Cir. 2005), and “gives primacy to the language of the claims,” *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014).

#### a. Intrinsic Evidence

The Court discusses the claim language, the prosecution history, and the specification in turn.

#### i. Claim Language

The Court begins by analyzing the claim language. According to the Federal Circuit,

“claim terms must be interpreted consistently” with other claim terms. *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed. Cir. 1995). Claim 1 requires that the cover be “configured to selectively close and open the case”; the case must “enclose a volume corresponding to a flowable liquid product”; the ultraviolet radiation source must “turn off when the volume is not closed”; and the “flowable liquid product can be accessed when the case is open.” ’965 Patent at Cl. 1. Considering all these claim elements together, the “cover” requires that the case be *sealed* when closed. Claim 1 requires that the case “*enclose* a volume corresponding to a flowable liquid product.” *Id.* (emphasis added). Only when the case is open can the “flowable liquid product . . . be accessed.” *Id.* Thus, if the case is not sealed when closed, then the case can hardly be said to “enclose” a volume of the flowable liquid product accessible when the case is open. For instance, the volume of flowable liquid product could leak and thus become accessible when the case is closed. Thus, the flowable liquid product would not be enclosed by the case. Therefore, the claim terms support the Court’s construction that when the case is closed, the case is also “sealed.”

ii. Prosecution History

In response to a United States Patent and Trademark Office (“USPTO”) office action rejecting various claims for being anticipated by the Palmer reference, United States Patent Application number 13/780,546, the applicant traversed the examiner’s rejection by distinguishing the Palmer reference. ECF No. 62-1 at 8. The Palmer reference was directed to improving air quality in a home by, for instance, passing the air through a germicidal radiation chamber containing at least one ultraviolet light source. U.S. Patent Appl. No. 13/780,546, Specification (filed February 28, 2013). The Palmer apparatus included a chamber with a cover. ECF No. 62-1 at 8. The applicant distinguished the Palmer reference by arguing that in Palmer, “regardless of the position of the cover” as open or closed, air could still pass into the chamber. *Id.* The applicant understood that in the instant invention, the cover, when closed, must seal the case such that a flowable liquid product in the volume of the case cannot leak out, unlike how the cover in Palmer,

when closed, would not prevent air from passing into the chamber.

On the other hand, Plaintiff asserts that the applicant distinguished the Palmer reference by arguing that the Palmer reference “does not disclose that the [Palmer reference’s] chamber [] encloses a volume corresponding to a flowable product as in claim 1.” Reply Br. at 3 (citing ECF No. 62-1 at 8). Also, Plaintiff believes the applicant’s argument in the previous paragraph regarding the permeability of the Palmer reference’s cover when closed was not sufficiently clear enough to disclaim embodiments of cases that fail to “seal” the enclosed volume when the cover is closed. *Id.* at 3. The Court finds Plaintiff’s arguments unpersuasive.

First, although Plaintiff notes that the applicant distinguished the Palmer reference because the reference lacked a chamber that encloses a volume of a flowable product, that argument is not mutually exclusive of the applicant’s argument in the same paragraph that the Palmer reference is also distinguishable because the Palmer reference allows air to enter the chamber even if the cover is closed. The applicant merely identified two different ways in which the Palmer reference could be distinguished from the patent application.

Moreover, the Court finds that the applicant disclaimed embodiments of cases that do not “seal” the enclosed volume when the case cover is closed. Prosecution disclaimer precludes “patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). For prosecution disclaimer to attach, “the disavowal must be both clear and unmistakable.” *Massachusetts Institute of Tech. v. Shire Pharm., Inc.*, 839 F.3d 1111, 1119 (Fed. Cir. 2016). “Where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations, we have declined to find prosecution disclaimer.” *Id.* (internal quotation marks omitted). A clear and unmistakable disavowal of scope takes place when, for instance, “the patentee explicitly characterizes an aspect of his invention in a specific manner to overcome prior art.” *Purdue Pharma L.P. v. Endo Pharm., Inc.*, 438 F.3d 1123, 1136 (Fed. Cir. 2006).

Here, the Court finds that disavowal was clear and unmistakable because the applicant

characterized an aspect of the invention in a specific manner to overcome the prior art Palmer reference. *See id.* Specifically, the applicant characterized the claimed invention as a “containing case” that can store a “flowable product” within when the case is closed. ECF No. 62-1 at 9-10. To overcome the Palmer reference, the applicant argued that the Palmer reference’s chamber is “not described as storing anything” because “it is not described as being completely enclosed, thereby allowing air to enter and leave the chamber” even if the chamber’s cover is closed. *Id.* at 8-10. Therefore, the applicant distinguished the claimed invention from the Palmer reference by characterizing the claimed invention as a case able to store a flowable product if the case is closed and thereby “sealing” the flowable product within the case, whereas the Palmer reference’s chamber is permeable even if the chamber’s cover is closed. So, if the claimed invention does not “seal” flowable product within the closed case, which would allow flowable product to escape or leak from the case, the applicant could not have distinguished the Palmer reference because the Palmer reference’s chamber is permeable even if the chamber’s cover is closed.

### iii. Specification

The ’965 Patent’s specification interchangeably uses “cover” and “cap.” *See, e.g.*, ’965 Patent at 3:52-53 (disclosing “an ultraviolet impermeable cover (also referred to as a cap)”); *id.* at 4:52-53 (referring to the cover as an “ultraviolet impermeable cap”); *id.* at 6:24-26 (same). Thus, the specification supports the construction that a cap can be used to seal the case.

However, the ’965 Patent makes no mention of a “lid,” which Defendants include in their proposed construction. Resp. Br. at 2. Defendants argue that in reference to Fig. 13B, which depicts a powder compact, the specification refers to the lid of the powder compact as a “cap.” Resp. Br. at 2. However, the Patent does not refer to the powder compact as having a “lid.” Also, during the claim construction hearing, Defendants’ counsel admitted that “lid” and “cap” are, in practice, equivalent. Courts have declined to adopt constructions that include synonyms. *Aircraft Technical Publishers v. Avantext, Inc.*, 2009 WL 3817944, at \*9 (N.D. Cal. Nov. 10, 2009) (declining to add a “synonymous” term in a construction because “‘generating’ has the same

meaning [as] ‘producing’”) (citing *Static Control Components, Inc. v. Lexmark Int’l, Inc.*, 502 F. Supp. 2d 568, 576 (E.D. Ky. 2007) (“[S]imply swapping words with synonyms is not construction.”)). Therefore, this Court finds that there is no need to include “lid” in this construction because Defendants’ counsel admitted that “lid” and “cap” are equivalent.

b. Summary

Intrinsic evidence such as the claim language, prosecution history, and patent specification all support the Court’s construction of the claim term “cover” in claim 1 of the ’965 Patent as “a cap that seals the case when closed or attached.”

The Court need not consider extrinsic evidence because the meaning of the claim term “cover” is resolvable by reliance on intrinsic evidence. If the meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz v. Rainbow Tech., Inc.*, 284 F.3d 1365, 1373 (Fed. Cir. 2002). “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.” *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1332 (Fed. Cir. 2001) (internal quotation marks omitted).

3. “second compartment defines the volume”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning, or in the alternative, “the volume includes the second compartment”	Indefinite. In the alternative, “only the second compartment is exposed to ultraviolet radiation from the at least one ultraviolet radiation source”

The phrase “second compartment defines the volume” appears in claim 2 of the ’965 Patent. Claim 2 of the ’965 Patent recites:

2. The apparatus of claim 1, wherein the case comprises:
  - a first compartment configured to store a first portion of the flowable liquid product; and
  - a second compartment configured to store a second portion of the flowable liquid product, wherein the second compartment includes a cover at least partially formed by an ultraviolet transparent material, and wherein the **second compartment defines the volume** such that the at least one ultraviolet radiation source is configured to generate

ultraviolet radiation for disinfecting the second portion of the flowable liquid product through the ultraviolet transparent material,

wherein the first compartment and the second compartment are both located within an interior region of the case.

'965 Patent at Cl. 2 (emphasis added).

Claim 1 of the '965 Patent recites:

1. An apparatus comprising:

an ultraviolet radiation containing case configured to enclose a volume corresponding to a flowable liquid product, wherein the flowable liquid product can be accessed when the case is open;

a cover configured to selectively close and open the case;

at least one ultraviolet radiation source mounted on at least one of: the case or the cover, the at least one ultraviolet radiation source comprising an ultraviolet light emitting diode configured to generate ultraviolet radiation for disinfecting the volume corresponding to the flowable liquid product; and

a sensor configured to cause the at least one ultraviolet radiation source to turn off when the volume is not closed.

'965 Patent at Cl. 1.

Plaintiff argues that "second compartment defines the volume" should be given its plain and ordinary meaning, or in the alternative, be construed to mean "the volume includes the second compartment." Opening Br. at 5. Defendants argue that "second compartment defines the volume" is indefinite, or alternatively, should be construed to mean "only the second compartment is exposed to ultraviolet radiation from the at least one ultraviolet radiation source." Resp. Br. at 4.

The Court finds that claim 2 is not indefinite. Moreover, for the reasons discussed below, the Court adopts Plaintiff's proposed construction and construes the claim term "second compartment defines the volume" to mean "the volume includes the second compartment."

As always, claim construction begins with an examination of the intrinsic evidence, *Gillette Co.*, 405 F.3d at 1370, and "gives primacy to the language of the claims," *Tempo Lighting, Inc.*, 742 F.3d at 977.

a. Intrinsic Evidence

The Court begins with the claim language, then turns to the specification. Finally, the Court addresses why the claim is not indefinite.

i. Claim Language

There are two major points of contention between the parties. The first point of contention concerns the meaning of “defines the volume,” and the second point of contention is over whether the claim term restricts exposure to ultraviolet radiation to only the second compartment. The Court discusses each point of contention in turn.

a. “Defines the volume”

First, the Court discusses the parties’ dispute over the meaning of “defines the volume.” Unfortunately, the ’965 Patent does not explicitly address what it means for the second compartment to “define” the volume. Defendants argue that in order for the second compartment to “define” the volume, the second compartment must occupy the entire volume of the case. Resp. Br. at 5. On the other hand, Plaintiff contends that “define” should not be interpreted in isolation. Rather, the entire phrase should be read in context with all the claim language. If read in context, Plaintiff asserts that the phrase is sufficiently clear that the relationship between the volume and the second compartment is such that the volume includes the second compartment. The Court finds that Plaintiff has the better argument.

Under Federal Circuit law, “[p]roper claim construction . . . demands interpretation of the entire claim in context, not a single element in isolation.” *Hockerson-Halberstadt, Inc. v. Converse Inc.*, 183 F.3d 1369, 1374 (Fed. Cir. 1999); *see also ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) (“While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered . . .”). “A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so . . .” *SimpleAir, Inc. v. Sony Ericsson Mobile Comm’cns AB*, 820 F.3d 419, 429 (Fed. Cir. 2016); *see also Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.”). Also,



“claims should be so construed, if possible, as to sustain their validity.” *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1332 (Fed. Cir. 2007).

The claim language supports the Court’s construction. Claim 2 depends from claim 1, which means that claim 2 refers “back to and further limit[s]” claim 1. 37 C.F.R. § 1.75(c). The preamble of claim 2 discloses that claim 2’s elements relate to “the case,” ’965 Patent at Cl. 2, which has antecedent support from claim 1’s disclosure of a “case configured to enclose a volume,” *id.* at Cl. 1. Thus, the “case” described by claim 2 encloses a “volume.” However, claim 2 states that a first compartment and a second compartment are “both located within an *interior region* of the case.” ’965 Patent at Cl. 2 (emphasis added). This is the ’965 Patent’s one and only reference to “interior region.” Nevertheless, the Court finds that the specification provides guidance to decipher the meaning of “interior region.”

Specifically, the ’965 Patent’s specification states that the case’s “volume [] can correspond to *an interior of a case* within which the flowable product is stored, an area where a portion of the flowable product is exposed, and/or the like.” *Id.* at 4:57-60 (emphasis added). The specification describes “interior” as a part of a case “within which the flowable product is scored.” *Id.* Likewise, the first and the second compartments as described in claim 2 both “store” portions of the “flowable liquid product.” *Id.* at Cl. 2. Thus, the “interior” as described in the specification performs the same function as the “interior region” as described in the claim (i.e., where first and second compartments that store flowable liquid product are located). Although the specification refers to “interior” as opposed to “interior region” as in claim 2, the Court finds that “interior” as used in the specification is synonymous with the meaning of claim 2’s “interior region.”

Therefore, because claim 2 provides that the second compartment is located within an interior region of the case, and the specification links the case volume with the “interior of the case,” the evidence supports the Court’s construction that “the volume includes the second compartment.” Though Defendants believe that the meaning of “defines the volume,” part of the claim term, requires that the second compartment occupy the *entire* volume of the case, the

Court’s discussion below explains why Defendants’ position is untenable. The only reasonable interpretation of “defines the volume” that gives effect to all claim terms is that the second compartment occupies a *part* of the volume of the case.

If the second compartment, which stores the second portion of the flowable liquid, occupies the *entirety* of the case’s interior region as Defendants suggest, various claim elements would be impermissibly read out of the claims or be rendered nonsensical. *See Bicon, Inc.*, 441 F.3d at 950 (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.”). For instance, one of claim 2’s elements is that “the first compartment and the second compartment are *both* located within an interior region of the case.” ’965 Patent at Cl. 2 (emphasis added). If the second compartment occupies the entire interior region of the case, the interior region of the case would not have room for the first compartment. Thus, Defendants’ argument improperly reads out claim 2’s requirement that the first and second compartments are both located within the case’s interior region.

Furthermore, claim 1’s volume of “flowable liquid product” is divided into a “first portion” stored within the first compartment and a “second portion” stored within the second compartment. *Id.*; ’965 Patent at Cl. 1. If the second compartment were to constitute the entire interior region of the case as Defendants posit, the case could only ever contain the second compartment’s second portion of the flowable liquid product. There would be no room for the first compartment that contains the first portion of the flowable liquid product. Consequently, if the second compartment constitutes the entire interior region of the case, as Defendants posit, the volume of claim 1’s “flowable liquid product” cannot be divided into two portions and stored within two compartments located in the interior region of the case as claim 2 requires.

In addition, if the second compartment were to constitute the entirety of the case’s interior region, the case could only ever enclose the volume that corresponds to the second portion of the flowable liquid product stored within the second compartment. As such, the second portion of the flowable liquid product would no longer be a *portion* of the volume of the flowable liquid product

1 enclosed by the case, as required by claim 2. Rather, the second portion of the flowable liquid  
2 product would necessarily constitute the entire volume of flowable liquid product enclosed by the  
3 case. A contradiction arises because the second portion of the flowable liquid product cannot  
4 simultaneously be a *portion* of the flowable liquid product enclosed by the case and also be the  
5 entire amount of flowable liquid product enclosed by the case.

6 Therefore, the plain language of the claims support the Court’s construction of “second  
7 compartment defines the volume” to mean “the volume includes the second compartment.”

8 b. Ultraviolet Radiation Exposure

9 Second, the parties disagree on whether the claim term limits exposure to ultraviolet  
10 radiation to just the second compartment. Claim 2 links the second compartment to ultraviolet  
11 radiation as follows:

12 [T]he second compartment defines the volume such that the at least  
13 one ultraviolet radiation source is configured to generate ultraviolet  
14 radiation for disinfecting the second portion of the flowable liquid  
product through the ultraviolet transparent material . . . .

15 ’965 Patent at Cl. 2.

16 In patent law, it is axiomatic that use of the word “comprising” or derivatives thereof, like  
17 “comprises,” in the preamble of a patent claim “is well understood to mean including but not  
18 limited to.” *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007) (internal  
19 quotation marks omitted). A patent claim using “comprises” can explicitly disclose various claim  
20 elements, but does not preclude the inclusion of additional, unrecited elements in the claim. Here,  
21 claim 2 uses “comprises,” so even though claim 2 states that the “at least one ultraviolet radiation  
22 source is configured to generate ultraviolet radiation for disinfecting the second portion of the  
23 flowable liquid product,” claim 2 does not preclude the possibility that ultraviolet radiation may be  
24 used to disinfect the first portion of the flowable liquid product as well. ’965 Patent at Cl. 2. In  
25 fact, claim 7, which depends from claim 2, claims a “plurality of ultraviolet radiation sources”  
26 configured to “disinfect the first portion of the flowable liquid product.” ’965 Patent at Cl. 7.  
27 Thus, the ’965 Patent’s claims support the Court’s conclusion that because claim 2’s preamble

1 uses “comprises” to describe the elements of claim 2, the claim does not prohibit interior regions  
2 of the case other than the second compartment from being disinfected.

3 In sum, claim 2 does not preclude areas other than the second compartment from being  
4 exposed to and disinfected by ultraviolet radiation. As a result, the Court cannot adopt  
5 Defendants’ construction of the claim term because the construction erroneously limits the  
6 exposure to ultraviolet radiation to “*only* the second compartment.” Resp. Br. at 4 (emphasis  
7 added).

8 ii. Specification

9 The ’965 Patent’s specification supports the Court’s construction that “the volume includes  
10 the second compartment” as well as Plaintiff’s position that the claim term does not restrict the  
11 exposure of ultraviolet radiation to just the second compartment.

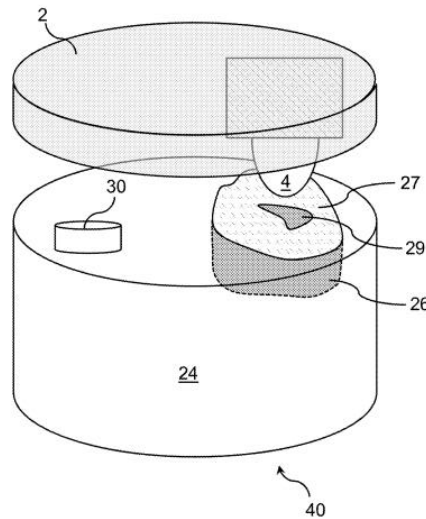
12 Fig. 2B below depicts a container (item 40) that contains a first compartment (item 24) and  
13 a second compartment (item 26). ’965 Patent at 6:55, 62-64. The second compartment (item 26)  
14 can have a cover (item 27) at least partially made of material transparent to ultraviolet radiation.  
15 *Id.* at 7:1-2. The cap (item 2) can be attached to the container (item 40). *Id.* at 7:22. Ultraviolet  
16 radiation sources (item 4) can be positioned to direct ultraviolet radiation at the second  
17 compartment (item 26) such that ultraviolet radiation passes through the second compartment’s  
18 cover (item 27) and into the second compartment (item 26), which may contain flowable liquid  
19 product (item 29). *Id.* at 7:24-32. In addition, “any portion of the second compartment [(item 26)]

can be fabricated using an ultraviolet transparent material.” *Id.* at 7:20-21.

When the cap (item 2) is attached to the container (item 40), the cap (item 2) thereby encloses the volume of the container (item 40). *Id.* at 2:12-18. The second compartment (item 26) is located within the volume. *Id.* at 2:38-40. Therefore, Fig. 2 and the detailed description associated with Fig. 2 buttress the Court’s construction that “the volume includes the second compartment.”

Moreover, assuming *arguendo* that the second compartment (item 27) were made entirely of an ultraviolet transparent material, the ultraviolet radiation directed at the second compartment

**FIG. 2B**



(item 26) could pass through the second compartment (item 27) and into the first compartment (item 24). Therefore, even though the ultraviolet radiation sources (item 4) are positioned to emit ultraviolet radiation into the second compartment (item 27), the specification does not limit exposure to ultraviolet radiation to just the second compartment (item 27). In fact, the specification states that “the ultraviolet radiation source(s) [(item 4)] can be operated . . . to disinfect the portions of . . . the container [(item 40)].” *Id.* at 7:33-35.

### iii. Why Claim 2 is not Indefinite

The Court rejects Defendants’ position that the claim is indefinite because a skilled artisan would understand, with reasonable certainty, the scope of the invention.

The United States Supreme Court has held that if a claim, “viewed in light of the specification and prosecution history, inform[s] those skilled in the art about the scope of the invention with reasonable certainty,” the claim is not indefinite. *Nautilus*, 572 U.S. at 910. In applying the *Nautilus* standard, the Federal Circuit has cautioned that “the dispositive question in an indefiniteness inquiry is whether the ‘claims,’ not particular claim terms” fail the *Nautilus* test. *Cox Commc’ns*, 838 F.3d at 1231. Defendants bear the “burden of proving indefiniteness by clear and convincing evidence.” *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017).

Defendants believe claim 2 is indefinite for two reasons. First, Defendants argue that claim 2 is indefinite because “the second compartment defines the volume” renders claim 2 internally contradictory. Resp. Br. at 5. Defendants assert that in order for the second compartment to “define” the volume enclosed by the case, the second compartment must occupy the entire volume enclosed by the case. *Id.* at 5-6. The contradiction arises because claim 2 requires that a first compartment also be located in an interior region of the case, a physical impossibility if the second compartment occupies the whole volume enclosed by the case. Second, Defendants find it contradictory that claim 1 requires the “at least one ultraviolet radiation source” to disinfect the volume, “but in each of the illustrated embodiments, the ‘at least one ultraviolet radiation source’ disinfects *only* the second compartment and the second portion of flowable liquid product therein.” *Id.* at 5 (emphasis added).

Defendants are correct in their understanding that “claims that [are] internally contradictory” are indefinite, and “claims that contradict[] the specification [are] invalid as indefinite.” *Multilayer Stretch Fling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1362 (Fed. Cir. 2016). However, the Court finds that claim 2 is not internally contradictory and does not contradict the specification. Below, the Court addresses each of Defendants’ arguments in turn.

First, the purported internal contradiction within claim 2 is of Defendants’ own making

1 because the contradiction only arises under Defendants’ erroneous interpretation of “second  
2 compartment defines the volume.” Specifically, Defendants interpret “defines the volume” to  
3 mean that the second compartment occupies the *entire* volume enclosed by the case, which creates  
4 the contradiction because claim 2 requires that a first compartment also occupy part of the volume  
5 enclosed by the case.

6 As discussed above, under Federal Circuit law, “claims are interpreted with an eye toward  
7 giving effect to all terms in the claim,” *Bicon, Inc.*, 441 F.3d at 950, and “claims should be so  
8 construed, if possible, as to sustain their validity,” *MBO Labs., Inc.*, 474 F.3d at 1332. Defendants’  
9 interpretation fails to give effect to “all terms in the claim” because the interpretation reads out  
10 multiple limitations from claim 2. *Bicon, Inc.*, 441 F.3d at 950. For instance, Defendants’  
11 interpretation reads out claim 2’s requirements that: “the first compartment and the second  
12 compartment are both located within an interior region of the case”; the volume of claim 1’s  
13 “flowable liquid product” is divided into two portions and stored within two compartments located  
14 in the interior region of the case; and the second compartment contains a second “portion” of the  
15 flowable liquid product. ’965 Patent at Cl. 2. Moreover, Defendants’ interpretation gives rise to  
16 the aforementioned contradiction, even though “claims should be so construed, if possible, as to  
17 sustain their validity.” *MBO Labs., Inc.*, 474 F.3d at 1332. Thus, as discussed above, the only  
18 reasonable interpretation of “second compartment defines the volume” that gives effect to all  
19 claim terms and does not render claim 2 internally contradictory is Plaintiff’s and the Court’s  
20 construction that “the volume includes the second compartment.”

21 Second, Defendants find it contradictory that claim 1 requires the “at least one ultraviolet  
22 radiation source” to disinfect the volume, “but in each of the illustrated embodiments, the ‘at least  
23 one ultraviolet radiation source’ disinfects *only* the second compartment and the second portion of  
24 flowable liquid product therein.” Resp. Br. at 5. However, it is not true that all the illustrated  
25 embodiments show that the ultraviolet radiation source only disinfects the second compartment  
26 and the second portion of flowable liquid product. As discussed above, Fig. 2B above depicts a  
27

container (item 40) that contains a first compartment (item 24) and a second compartment (item 26). '965 Patent at 6:55, 62-64. Ultraviolet radiation sources (item 4) can be positioned to direct ultraviolet radiation at the second compartment (item 26) such that ultraviolet radiation passes through the second compartment's cover (item 27) and into the second compartment (item 26). *Id.* at 7:1-2. However, "any portion of the second compartment [(item 26)] can be fabricated using an ultraviolet transparent material." *Id.* at 7:20-21. Thus, if the second compartment (item 27) were made entirely of an ultraviolet transparent material, the ultraviolet radiation directed at the second compartment (item 26) could pass through the second compartment (item 27) and into the first compartment (item 24). In addition, the specification states that "the ultraviolet radiation sources [(item 4)] can be operated . . . to disinfect the portions of . . . the container [(item 40)]." *Id.* at 7:33-35. Therefore, there is no contradiction because Fig. 2B and its corresponding description within the specification do not limit the "at least one ultraviolet radiation source" from disinfecting the volume within the container.

In sum, Defendants have failed to meet their burden of proving claim 2 to be indefinite by clear and convincing evidence. The Court's construction of the claim term does not create an internal contradiction within claim 2, and Fig. 2B is an illustrated embodiment that shows that the "at least one ultraviolet radiation source" can, for instance, be used to disinfect the first compartment or the volume of the container. *See, e.g., Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1335-36 (Fed. Cir. 2003) (finding that claims were no longer indefinite after construing claims in a manner that eliminated an "inherent contradiction" within the claims).

#### b. Summary

Intrinsic evidence such as the claim language and patent specification all support the Court's construction of the claim term "second compartment defines the volume" in claim 2 of the '965 Patent as "the volume includes the second compartment."

The Court need not consider extrinsic evidence because the meaning of the claim term "second compartment defines the volume" is resolvable by reliance on intrinsic evidence. If the



meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz*, 284 F.3d at 1373. “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.” *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (internal quotation marks omitted).

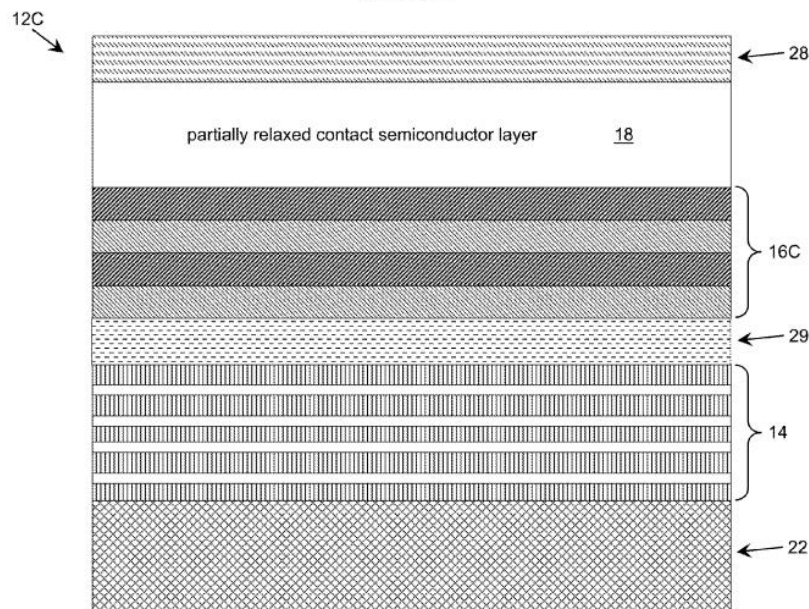
## B. The '496 Patent

### 1. Overview of the '496 Patent

The '496 Patent, entitled Light Emitting Heterostructure with Partially Relaxed Semiconductor Layer, is directed toward a “light emitting heterostructure” that includes a partially relaxed semiconductor layer that “can be included as a sublayer of a contact semiconductor layer of the light emitting heterostructure.” '496 Patent at 2:26-30. In other words, the '496 Patent is directed at improving, for instance, the light emitting characteristics of a heterostructure by adding and arranging various layers to the heterostructure in ways that can result in fewer defects in the light generating structure of the heterostructure. *Id.* at 2:30-34. The Court finds Fig. 7 of the Patent to be illuminating.

Fig. 7 below depicts all the layers that can comprise an embodiment of the light emitting

**FIG. 7**



heterostructure (item 12C). There is an n-type contact semiconductor layer (item 22) located on an opposing side of the light generating structure (item 14) and a p-type contact semiconductor layer (item 28) located on an opposing side of the light generating structure (item 14), a few layers above the light generating structure (item 14). *Id.* at 7:56-60. A “partially relaxed p-type contact semiconductor layer [item 18] and a dislocation blocking structure [item 16C] are shown embedded in the p-type contact semiconductor layer [item 28].” *Id.* at 7:60-63. There is an electron blocking layer (item 29) adjacent to the light generating structure (item 14). *Id.* at 7:63-64. The dislocation blocking structure (item 16C) is composed of alternating compressive and tensile layers. *Id.* at 8:1-2.

Here, the parties request construction of two terms: (1) “embedded partially relaxed sublayer” (found in claims 1, 4, 7, and 12); and (2) “dislocation blocking structure” (found in claims 1, 7, and 12). Below, the Court addresses each claim term in turn.

## 2. “embedded partially relaxed sublayer”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“The p-type contact semiconductor layer and/or the n-type contact semiconductor layer incorporates within that layer a semiconductor sublayer that includes dislocations that reduce stress”	“a sublayer that includes dislocations that reduce stress and is surrounded by the layer it is incorporated into”

The claim term “embedded partially relaxed sublayer” appears in claims 1, 4, 7, and 12.

Claim 1 of the ’496 Patent recites:

1. A heterostructure comprising:
  - a substrate;
  - a buffer layer adjacent to the substrate;
  - a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;
  - and n-type contact semiconductor layer located on the first side of the light generating structure;

a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an **embedded partially relaxed sublayer**, and wherein at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer; and

a dislocation blocking structure located between the **partially relaxed sublayer** and the light generating structure, wherein the dislocation blocking structure includes a graded composition that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 1 (emphasis added).

Claim 4 of the '496 Patent recites:

4. The heterostructure of claim 1, wherein the heterostructure is formed of group III-V materials, and wherein a lattice mismatch is obtained by a change in an aluminum molar content of the **partially relaxed sublayer**.

'496 Patent at Cl. 4 (emphasis added).

Claim 7 of the '496 Patent recites:

7. A device comprising:

a mesa structure including:

a substrate;

a buffer layer adjacent to the substrate;

a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;

an n-type contact semiconductor layer located on the first side of the light generating structure;

a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an **embedded partially relaxed sublayer**, and wherein at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer; and

wherein the at least one of the contact semiconductor layers further includes a dislocation blocking structure located between the **partially relaxed sublayer** and the light generating structure, and wherein the dislocating blocking structure includes a graded

composition that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 7 (emphasis added).

Claim 12 of the '496 Patent recites:

12. A method comprising:

forming a heterostructure, the heterostructure comprising:

a substrate;

a buffer layer adjacent to the substrate;

a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;

an n-type contact semiconductor layer located on the first side of the light generating structure;

a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an **embedded partially relaxed sublayer**, and wherein the at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer; and

a dislocation blocking structure located between the **partially relaxed sublayer** and the light generating structure, wherein the dislocation blocking structure includes a graded composition that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 12 (emphasis added).

Plaintiff argues that the claim term “embedded partially relaxed sublayer” should be construed to mean: “The p-type contact semiconductor layer and/or the n-type contact semiconductor layer incorporates within that layer a semiconductor sublayer that includes dislocations that reduce stress.” Opening Br. at 7. Defendants argue that the claim term should be construed to mean: “[A] sublayer that includes dislocations that reduce stress and is surrounded by the layer it is incorporated into.” Resp. Br. at 7.

As an initial matter, all parties acknowledge that the claim term is “embedded partially relaxed sublayer.” Opening Br. at 7; Resp. Br. at 7. However, the '496 Patent equates “*embedded*

1 partially relaxed sublayer” with “partially relaxed sublayer.” For example, claims 1, 7, and 12 all  
2 disclose “*an* embedded partially relaxed sublayer,” which provides the antecedent basis for claims  
3 1, 7, and 12 to refer to “embedded partially relaxed sublayer” as “*the* partially relaxed sublayer.”  
4 Thus, the Court understands “partially relaxed sublayer” and “embedded partially relaxed  
5 sublayer” to be synonymous.

6 For the reasons discussed below, the Court mostly adopts Plaintiff’s proposed construction.  
7 However, the Court modifies Plaintiff’s proposed construction to be more faithful to the claims  
8 and specification because courts may “adopt a definition not proposed by either party that best fits  
9 with the claim language and specification.” *Homeland Housewares, LLC*, 865 F.3d at 1376.  
10 Specifically, the Court’s construction replaces the phrase “incorporates within that layer” in  
11 Plaintiff’s proposed construction with “includes.” Thus, the Court construes the claim term  
12 “embedded partially relaxed sublayer” to mean “the p-type contact semiconductor layer and/or the  
13 n-type contact semiconductor layer includes a semiconductor sublayer that includes dislocations  
14 that reduce stress.”

15 As always, claim construction begins with an examination of the intrinsic evidence,  
16 *Gillette Co.*, 405 F.3d at 1370, and “gives primacy to the language of the claims,” *Tempo Lighting,*  
17 *Inc.*, 742 F.3d at 977.

18 a. Intrinsic Evidence

19 Below, the Court discusses the claim language, then turns to the specification, and ends  
20 with prosecution history.

21 i. Claim Language

22 As to claim language, the Court addresses how the claim language supports the Court’s  
23 construction, how the claim language does not support Defendants’ proposed construction, and  
24 why the Court uses the term “includes” in the Court’s construction.

25 First, the claim language supports the Court’s construction. For instance, the Court’s  
26 construction discloses n-type and p-type contact semiconductor layers. Likewise, claim 1 discloses  
27

that the semiconductor structure includes “an n-type contact semiconductor layer” and “a p-type contact semiconductor layer.” ’496 Patent at Cl. 1. Furthermore, the Court’s construction states that the n-type and/or the p-type contact semiconductor layer includes a semiconductor sublayer. Correspondingly, claim 1 states that “at least one of the contact semiconductor layers includes an embedded partially relaxed sublayer.” *Id.* Moreover, the Court’s construction specifies that the semiconductor sublayer includes dislocations that reduce stress. Although none of the ’496 Patent claims associate the embedded partially relaxed sublayer (i.e., the semiconductor sublayer mentioned in the Court’s construction) with dislocations that reduce stress, the specification bridges that gap. The “specification acts as a dictionary when it expressly defines terms used in the claims.” *Bell Atlantic Network Servs., Inc. v. Covad Commc’ns Grp, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (internal quotation marks omitted). According to the specification, a semiconductor layer or sublayer is “partially relaxed” if the stresses in the layer or sublayer are reduced. ’496 Patent at 6:13-14. Dislocations within a semiconductor layer or sublayer “partially relax the layer and reduce stresses in the layer.” *Id.* at 6:8-11. Therefore, the Court’s construction correctly specifies that the semiconductor sublayer has dislocations that reduce stress.

Though the Court relies upon claim 1 to support the Court’s construction, claims 4, 7, and 12 also include the claim term. Claims 4, 7, and 12 feature, describe, and use the claim term in a manner indistinguishable from claim 1’s use of the claim term. For instance, claim 4 depends from claim 1, which provides the antecedent basis for claim 4’s use of the claim term. Thus, the claim term carries the same meaning in claims 1 and 4 because the Federal Circuit has held that claim terms “[b]ased on [an] antecedent basis relationship . . . carry the same meaning throughout the claims.” *HowLink Global LLC v. Network Commc’ns Int’l Corp.*, 561 Fed. App’x 898, 903 (Fed. Cir. 2014). Indeed, a claim term “is presumed to have the same meaning throughout all of the claims in the absence of any reason to believe otherwise.” *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012). In addition, independent claims 7 and 12 also use the claim term, which is “presumed to have the same meaning” as used in claim 1.

1 *Id.*

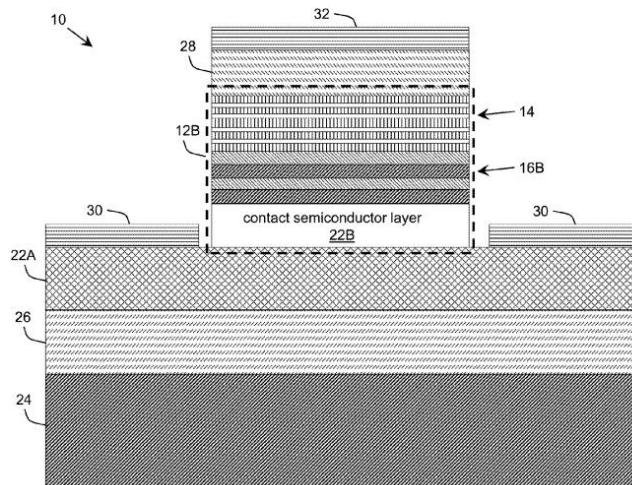
2 The claim language does not support Defendants’ proposed construction. Defendants  
3 construe the claim term as “a sublayer that includes dislocations that reduce stress and is  
4 *surrounded by* the layer it is incorporated into.” Resp. Br. at 7 (emphasis added). The Court  
5 declines to adopt Defendants’ proposed construction because the phrase “surrounded by” in  
6 Defendants’ proposed construction is unsupported by the claim language and impermissibly  
7 narrows claim scope. *See, e.g., Linear Tech. Corp. v. Int’l Trade Comm’n*, 566 F.3d 1049, 1055  
8 (Fed. Cir. 2009) (holding that it was error to narrowly construe claims if “there is nothing in the  
9 claim language or specification that supports narrowly construing the terms”); *Kara Tech. Inc. v.*  
10 *Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (“The patentee is entitled to the full scope  
11 of his claims . . .”).

12 By contrast, the ’496 Patent’s claims use “includes” to define the spatial relationship  
13 between the “embedded partially relaxed sublayer” and the p-type or n-type contact semiconductor  
14 layers. Indeed, claim 1 states that at least one of the n-type or p-type contact semiconductor layers  
15 *includes* an embedded partially relaxed sublayer. *See, e.g., ’496 Patent at Cl. 1* (emphasis added).  
16 Consequently, to ensure that the Court’s construction is faithful to the claim language and scope,  
17 the Court’s construction states: “the p-type contact semiconductor layer and/or the n-type contact  
18 semiconductor layer *includes* a semiconductor sublayer that includes dislocations that reduce  
19 stress.”

20 The Federal Circuit has held that claim terms are “given their ordinary and customary  
21 meaning . . . considered in the context of all the intrinsic evidence, including the claims.” *Biogen*  
22 *Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1094 (Fed. Cir. 2013); *see also Epistar Corp.*  
23 *v. Int’l Trade Comm’n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (“A heavy presumption exists that  
24 claim terms carry their full ordinary and customary meaning . . .”). Sometimes, “the ordinary  
25 meaning of claim language as understood by a person of skill in the art may be readily apparent  
26 even to lay judges, and claim construction in such cases involves little more than the application of

the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314. Under such circumstances, “general purpose dictionaries *may* be helpful,” but there is no indication that Federal Circuit law *requires* a court to consult extrinsic evidence such as general purpose dictionaries. *Id.* (emphasis added). Here, the Court need not rely upon dictionaries or other extrinsic sources to draw the simple conclusion that the ordinary and customary meaning of “includes,” a term used throughout the claims, specification, and in the Court’s construction, is not synonymous with “surrounded by,” a term that only appears in Defendants’ proposed construction.

**FIG. 6**



For example, the '496 Patent’s specification discloses that “the light emitting heterostructure 12B *includes* a light generating structure 14.” '496 Patent at 6:53-54 (emphasis added). As Fig. 6 above shows, the light emitting heterostructure (item 12B) is comprised of various layers such as items 16B and 22B. One of those layers is the light generating structure (item 14). Thus, the '496 Patent uses “includes” to describe a semiconductor layer contained within another semiconductor structure. Moreover, the '496 Patent discloses that a “dislocation blocking structure” can be described as “included” in an adjacent “partially relaxed semiconductor layer.” *Id.* at 2:30-32; *see also id.* at 3:54-56 (describing a semiconductor structure as “included” in an adjacent semiconductor layer). Therefore, the '496 Patent uses “included” in two ways: (1) to describe a semiconductor layer *within* another semiconductor layer; and (2) to describe a semiconductor layer *adjacent* to another



semiconductor layer.

On the other hand, Defendants’ use of “surrounded by” in Defendants’ proposed construction would impermissibly narrow the scope of the claims. For instance, if the sublayer that includes dislocations is *surrounded by* the layer it is incorporated into, then the sublayer with dislocations must be sandwiched within at least one of the n-type or p-type contact semiconductor layers. However, as discussed above, a layer can be said to *include* a semiconductor layer that is either adjacent to the layer or surrounded by the layer.

Moreover, although the Court adopted a large portion of Plaintiff’s proposed construction, the Court replaced the phrase “incorporates within that layer” with “includes.” The rationale for this change is similar to the Court’s reasoning for rejecting Defendants’ proposed construction. The Court believes that the phrase “incorporates within that layer” might be erroneously understood to mean that the semiconductor sublayer can only be located “within” the p-type or n-type contact semiconductor layer so that the contact semiconductor layer surrounds the semiconductor sublayer. As discussed above, such an interpretation impermissibly narrows the claims, which state that “at least one of the contact semiconductor layers *includes* an embedded partially relaxed sublayer.” ’496 Patent at Cl. 1 (emphasis added). Thus, the Court’s construction uses the term “includes” because the claims also use “includes,” which has an easily understood plain and ordinary meaning.

## ii. Specification

The Court first discusses how the specification supports the Court’s construction of the claim term “embedded partially relaxed sublayer,” then how the specification does not support Defendants’ proposed construction.

First, the specification explains that a partially relaxed sublayer “can be included as a sublayer of a contact semiconductor layer,” of which there are two types: a p-type or an n-type contact semiconductor layer. ’496 Patent at 2:28-29, 2:37-42. Correspondingly, the Court’s construction specifies that the “p-type contact semiconductor layer and/or the n-type contact

semiconductor layer includes a semiconductor sublayer.”

Moreover, the claim term describes the semiconductor sublayer as “partially relaxed.” The specification explains that a semiconductor layer or sublayer is “partially relaxed” if the stresses in the layer or sublayer are reduced. *Id.* at 6:13-14. This stress reduction can be achieved with dislocations that “partially relax the layer and reduce stresses in the layer.” *Id.* at 6:8-11.

Correspondingly, to reflect that the semiconductor sublayer is “partially relaxed,” the Court’s construction specifies that the semiconductor sublayer “includes dislocations that reduce stress.”

In addition, the claim term states that the partially relaxed sublayer is “embedded.” The Court finds that Fig. 7 and the corresponding discussion in the specification elucidate the meaning of “embedded.”

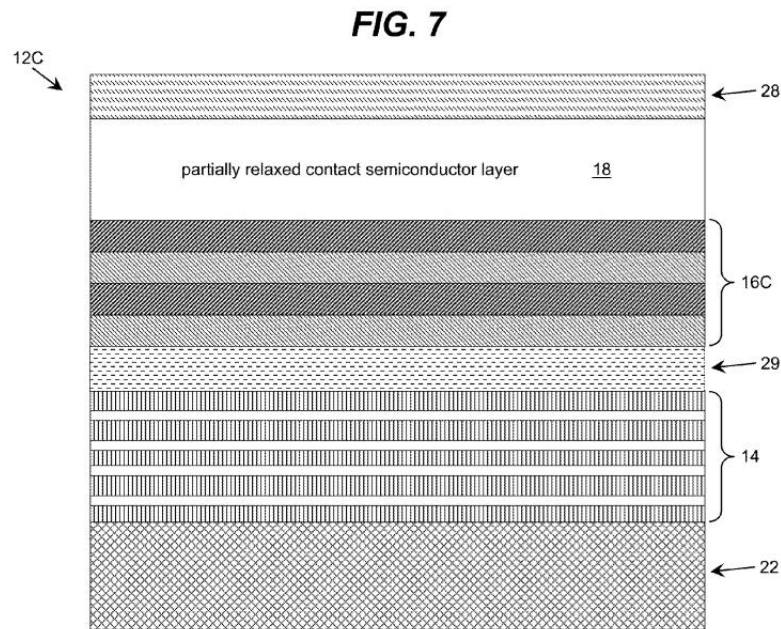


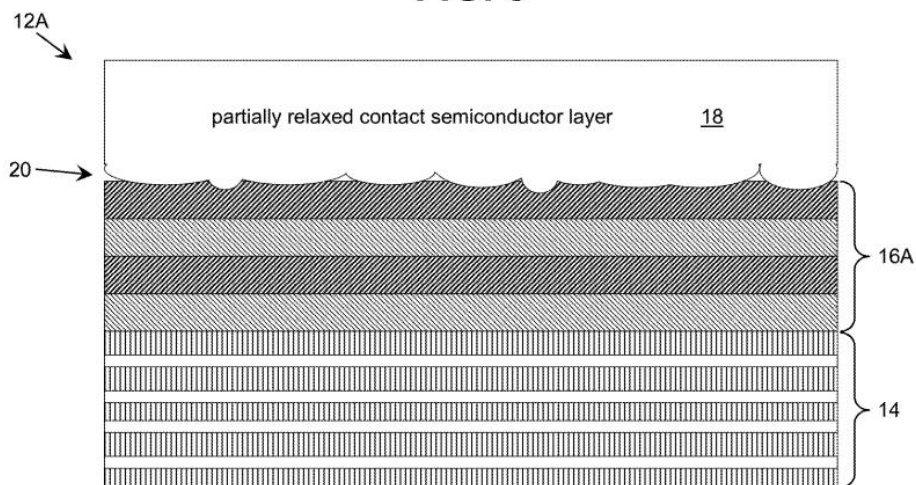
Fig. 7, shown above, depicts a light emitting heterostructure (item 12C). *Id.* at 7:53-54. The specification states the “partially relaxed p-type contact semiconductor layer” (item 18) and the “dislocation blocking structure” (item 16C) are “*embedded* in the p-type contact semiconductor layer” (item 28). *Id.* at 7:60-63 (emphasis added). Thus, the partially relaxed p-type contact semiconductor layer (item 18) is described as embedded in the *adjacent* p-type contact semiconductor layer (item 28). *Id.* Moreover, even though the dislocation blocking structure (item

16C) is separated from the p-type contact semiconductor layer (item 28) by another semiconductor layer (item 18), the specification nonetheless describes the dislocation blocking structure (item 16C) as embedded in the p-type contact semiconductor layer (item 28). *Id.*

The meaning of embedded that appears in the above discussion of Fig. 7 is consistent with the Court's construction. Fig. 7 and the associated discussion show that a semiconductor layer can be described as embedded in an adjacent semiconductor layer. Correspondingly, the Court's construction specifies that a p-type and/or a n-type contact semiconductor layer includes a semiconductor sublayer which, as discussed above, means that the contact semiconductor layer can adjoin the semiconductor sublayer. Therefore, the Court's construction of the claim term is entirely consistent with the specification.

Second, Defendants' proposed construction is: "a sublayer that includes dislocations that reduce stress and is surrounded by the layer it is incorporated into." Resp. Br. at 7. The Court does not adopt Defendants' proposed construction because the construction describes the semiconductor sublayer as "*surrounded by* the layer it is incorporated into," which is inconsistent with the specification and claims. *Id.* (emphasis added). As discussed above, the '496 Patent states that the p-type or n-type contact semiconductor layer *includes* the semiconductor sublayer. *See, e.g.,* '496 Patent at Cl. 1. The meaning and scope of "includes" is broader than "surrounded by," so to use "surrounded by" in a construction of the claim term would improperly narrow the scope

**FIG. 5**



of the claim term, and thus the claim. Fig. 5 of the '496 Patent elucidates the meaning of "includes."

Fig. 5 above depicts a light emitting heterostructure (item 12A). *Id.* at 6:45-46. The light emitting heterostructure (item 12A) is comprised of multiple semiconductor layers (items 14, 16A, 18). One side of the partially relaxed p-type contact semiconductor layer (item 18) has an interface (item 20) with a semiconductor layer called a "dislocation blocking structure" (item 16A). *Id.* at 6:45-49, 7:23. Because the partially relaxed p-type contact semiconductor layer (item 18) is the topmost semiconductor layer of the entire light emitting heterostructure (item 12A), the partially relaxed p-type contact semiconductor layer (item 18) does not interface with any semiconductor layer other than the dislocation blocking structure (item 16A).

Critically, the specification describes the light emitting semiconductor structure (item 12A) to "include," *inter alia*, the "partially relaxed p-type contact semiconductor layer" (item 18). *Id.* at 6:46-50. As such, the specification illustrates that the semiconductor layers of a semiconductor structure (item 12A) can be said to "include" a partially relaxed p-type contact semiconductor layer (item 18), even if the partially relaxed p-type contact semiconductor layer" (item 18) is the topmost semiconductor layer that interfaces with only one other semiconductor layer.

By contrast, if the specification's description of Fig. 5 used "surrounded by" instead of "include," then the partially relaxed p-type contact semiconductor layer (item 18) could not be the topmost of all the semiconductor layers in the semiconductor structure (item 12A). Rather, the partially relaxed p-type contact semiconductor layer (item 18) could only be sandwiched within or between one of the other semiconductor layers.

In sum, the '496 Patent's specification wholly supports the Court's construction. Moreover, the specification demonstrates that a hypothetical first semiconductor layer *embedded* in a hypothetical second semiconductor layer could mean that the first and second layers are adjacent to one another.

### iii. Prosecution History

Defendants assert that during prosecution, “the applicant disclaimed an interpretation of ‘embedded’ that embraced a [first semiconductor] layer that would be *adjacent* to [a second semiconductor layer] rather than *surrounded*” by the second semiconductor layer. Resp. Br. at 8 (emphasis added). However, the Court does not find that prosecution disclaimer applies here.

Prosecution disclaimer precludes “patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng’g, Inc.*, 334 F.3d at 1323. For prosecution disclaimer to attach, “the disavowal must be both clear and unmistakable.” *Massachusetts Institute of Tech.*, 839 F.3d at 1119 (Fed. Cir. 2016). “Where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations, we have declined to find prosecution disclaimer.” *Id.* (internal quotation marks omitted). “Prosecution disclaimer does not apply . . . if the applicant simply describes features of the prior art and does not distinguish the claimed invention based on those features.” *Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1342 (Fed. Cir. 2012).

During prosecution, the examiner relied upon the Kang, Yan, and Chua references to reject as obvious the claims that became claims 1 and 7 in the ’496 Patent. ECF No. 58-1, Ex. 4 at 7. The examiner stated that Yan disclosed a partially relaxed sublayer, otherwise referenced as a “relaxation enhancement layer” by the Yan reference. *Id.* at 8. The examiner concluded that it would be obvious to incorporate Yan’s partially relaxed sublayer into any of Kang’s semiconductor layers such that Kang’s semiconductor layer would surround Yan’s partially relaxed sublayer. *Id.* The examiner also stated that Kang as modified by Yan disclosed all of the claim limitations except a dislocation blocking structure with a graded composition. *Id.* However, the examiner found that Chua taught such a dislocation blocking structure. *Id.* at 9.

In response to the examiner’s rejection, the applicant stated that the “relaxation enhancement layer [] of Yan would be [] a separate layer, not [] a sub-layer within any of the layers of Kang’s light emitting structure.” ECF No. 58-1, Ex. 3 at 13. The applicant’s conclusory statement forms the basis of Defendants’ prosecution disclaimer argument. However, Defendants

fail to contextualize the applicant’s statement, which appeared after the applicant merely described multiple features of Yan’s relaxation enhancement layer. Specifically, the applicant described features such as: “Yan teaches [] that the relaxation enhancement layer [] can be a single layer or multiple layers,” *id.* at 13; “Yan discusses that the relaxation enhancement layer [] has a lattice constant that is either larger than the strain balancing layer . . . or smaller than the underlying electron injection layer,” *id.*; and “Yan teaches . . . that the relaxation enhancement layer [] can be grown on the electron injection layer,” *id.* However, the applicant did not distinguish the claimed invention based on any of the aforementioned features of Yan’s relaxation enhancement layer. Pursuant to the Federal Circuit’s decision in *Grober*, the applicant’s statement does not give rise to prosecution disclaimer. In *Grober*, the Federal Circuit held that “[p]rosecution disclaimer does not apply . . . if the applicant simply describes features of the prior art and does not distinguish the claimed invention based on those features.” 686 F.3d at 1342.

Therefore, prosecution history supports the notion that the partially relaxed sublayer can be described as “embedded” in another semiconductor layer, even if the partially relaxed sublayer is adjacent to the other semiconductor layer.

#### b. Summary

The intrinsic evidence, such as the claim language, patent specification, and prosecution history all support the Court’s construction of the claim term “embedded partially relaxed sublayer” in claims 1, 4, 7, and 12 of the ’496 Patent as “the p-type contact semiconductor layer and/or the n-type contact semiconductor layer includes a semiconductor sublayer that includes dislocations that reduce stress.”

The Court need not consider extrinsic evidence because the meaning of the claim term “embedded partially relaxed sublayer” is resolvable by reliance on intrinsic evidence. If the meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz*, 284 F.3d at 1373. “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of

the intrinsic evidence.” *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (internal quotation marks omitted).

### 3. “dislocation blocking structure”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Should this element not be found to be a means-plus-function limitation (as asserted by Plaintiff), the proposed construction is: “an epitaxially grown semiconductor layer having substantially fewer dislocations at a first side than at a second side”;	This term is governed by 35 U.S.C. § 112(6).  Function: blocking dislocations.  Structure: a layer including alternating compressive and tensile sublayers, as disclosed in the specification at 8:1-9, 8:20-23, 8:37-41, 9:4-40, 9:55-60, 10:2-11, 10:20-11:3, and 11:51-61 and Figs. 7, 8, 9A, 9B, 10A, 10B, 11A, 11B, and 14.
or  Should the claim term be a means-plus-function claim (as asserted by Defendants), the only possible functional language is “dislocation blocking,” which requires no construction. Corresponding structures are disclosed at 8:1-4; 8:4-8; 8:9-19; 8:20-23; 8:37-41; 9:4-20; 9:21-40; 9:55-60; 10:2-11; 10:20-11:3; 11:4-21; 11:51-61; Figs. 7, 8, 9A, 9B, 10A, 10B, 11A, 11B, and 14, as well as equivalents thereof. The dislocation blocking structure includes a graded composition that changes from a first side of the dislocation blocking structure to a second side thereof.	

The claim term “dislocation blocking structure” appears in claims 1, 7, and 12.

At the claim construction hearing, Plaintiff conceded that Defendants’ proposed construction is correct and adopted Defendants’ proposed construction. Thus, the Court adopts Defendants’ proposed construction, and construes the claim term “dislocation blocking structure” in claims 1, 7, and 12 of the ’496 Patent as a means-plus-function term governed by 35 U.S.C. § 112(6). The function is blocking dislocations. The structure is a layer including alternating compressive and tensile sublayers, as disclosed in the specification at 8:1-9, 8:20-23, 8:37-41, 9:4-40, 9:55-60, 10:2-11, 10:20-11:3, and 11:51-61 and Figs. 7, 8, 9A, 9B, 10A, 10B, 11A, 11B, and 14.

### 4. “graded composition”

Plaintiff's Proposed Construction	Defendants' Proposed Construction
"The composition of the dislocation blocking structure changes across its thickness"	"Composition that gradually and monotonically changes from one side to the opposite side"

The phrase "graded composition" appears in claims 1, 7, and 12 of the '496 Patent. Claim 1 of the '496 Patent recites:

1. A heterostructure comprising:
  - a substrate;
  - a buffer layer adjacent to the substrate;
  - a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;
  - and n-type contact semiconductor layer located on the first side of the light generating structure;
  - a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an embedded partially relaxed sublayer, and wherein at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer;
  - and
  - a dislocation blocking structure located between the partially relaxed sublayer and the light generating structure, wherein the dislocation blocking structure includes a **graded composition** that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 1 (emphasis added).

Claim 7 of the '496 Patent recites:

7. A device comprising:
  - a mesa structure including:
    - a substrate;
    - a buffer layer adjacent to the substrate;
    - a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;



an n-type contact semiconductor layer located on the first side of the light generating structure;

a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an embedded partially relaxed sublayer, and wherein at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer; and

wherein the at least one of the contact semiconductor layers further includes a dislocation blocking structure located between the partially relaxed sublayer and the light generating structure, and wherein the dislocating blocking structure includes a **graded composition** that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 7 (emphasis added).

Claim 12 of the '496 Patent recites:

12. A method comprising:

forming a heterostructure, the heterostructure comprising:

a substrate;

a buffer layer adjacent to the substrate;

a light generating structure having a first side and a second side, wherein the substrate is transparent to light generated by the light generating structure;

an n-type contact semiconductor layer located on the first side of the light generating structure;

a p-type contact semiconductor layer located on the second side of the light generating structure, wherein at least one of the contact semiconductor layers includes an embedded partially relaxed sublayer, and wherein the at least one of the contact semiconductor layers is located between the light generating structure and the buffer layer; and

a dislocation blocking structure located between the partially relaxed sublayer and the light generating structure, wherein the dislocation blocking structure includes a **graded composition** that changes from a first side of the dislocation blocking structure to a second side thereof.

'496 Patent at Cl. 12 (emphasis added).

Plaintiff argues that “graded composition” should be construed to mean: “The composition

of the dislocation blocking structure changes across its thickness.” Opening Br. at 12. Defendants argue that the claim term should be construed to mean: “Composition that gradually and monotonically changes from one side to the opposite side.” Resp. Br. at 12.

For the reasons discussed below, the Court adopts Plaintiff’s proposed construction. Thus, the Court construes the claim term “graded composition” to mean “the composition of the dislocation blocking structure changes across its thickness.”

#### a. Intrinsic Evidence

As always, claim construction begins with an examination of the intrinsic evidence, *Gillette Co.*, 405 F.3d at 1370, and “gives primacy to the language of the claims,” *Tempo Lighting, Inc.*, 742 F.3d at 977.

Thus, the Court addresses: (1) how the claim language and specification support the Court’s construction; (2) Defendants’ criticisms of the construction the Court adopts; and (3) the prosecution history.

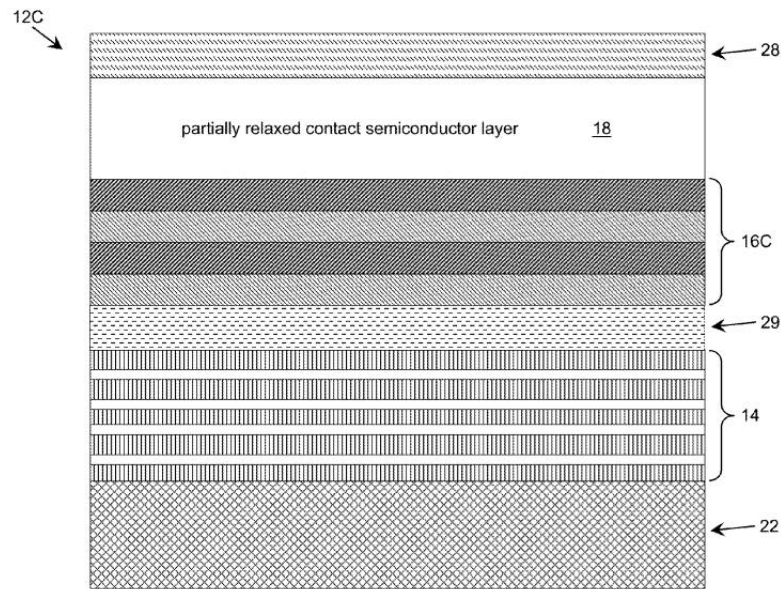
#### i. Claim Language and Specification

First, the claim language and specification support the Court’s construction. For instance, claim 1 discloses that “the dislocation blocking structure includes a graded composition.” ’496 Patent at Cl. 1. Similarly, the specification states that “the dislocation blocking structure [] can have a graded composition.” *Id.* at 8:38-39. Thus, the Court’s construction begins by referencing the “composition of the dislocation blocking structure.”

Furthermore, claim 1 specifies that the dislocation blocking structure has a “composition that changes from a first side of the dislocation blocking structure to a second side thereof.” *Id.* at Cl. 1. Likewise, Fig. 7 below depicts a dislocation blocking structure (item 16C) that has “a graded composition of aluminum,” wherein the molar fraction of the aluminum changes from the bottom side of the dislocation blocking structure to the top side of the dislocation blocking structure. *Id.* at 8:38-41. Thus, Fig. 7 suggests that a semiconductor layer with a graded composition means that the composition changes across the vertical dimension of the layer, or in

other words, from the bottom of the layer to the top of the layer. Similarly, the specification

**FIG. 7**



describes a semiconductor layer wherein physical characteristics of the layer change between “the bottom” of the layer and “the top” of the layer. *Id.* at 5:7-9. Because the ’496 Patent only depicts and discusses semiconductor structures composed of semiconductor layers that are vertically stacked, each semiconductor layer can be described to have a top side and a bottom side.

Also, the specification discusses a property of semiconductor layers called the lattice constant, which changes with the degree to which a semiconductor layer or part of a layer is “relaxed.” *Id.* at 6:1-11. The specification gives an example wherein a semiconductor layer is unrelaxed on either the top or bottom side of the layer and partially relaxed on the opposite side of the layer. *Id.* at 6:17-19. The specification acknowledges that “[i]n this case, the lattice constant may *change through the layer thickness.*” *Id.* at 6:19-20 (emphasis added). As the lattice constant is associated with a semiconductor layer’s degree of relaxation, the lattice constant changes from the unrelaxed top/bottom side of the layer to the opposite partially relaxed side of the layer. Consequently, a layer’s “thickness” is defined as the region between the bottom side of the semiconductor layer and the top side of the semiconductor layer (or vice versa).

Thus, the claims and specification support the Court’s construction of “graded

composition” to mean that “the composition of the dislocation blocking structure changes across its thickness.”

ii. Defendants’ Criticism of the Construction the Court Adopts

Defendants argue that Plaintiff’s proposed construction, which the Court adopts, of the claim term “graded composition” impermissibly renders “graded” superfluous. Resp. Br. at 13. Specifically, Defendants contend that the Court construes “graded” as “changing across the thickness,” which is redundant because the claims already require that the composition of the dislocation blocking structure “changes from a first side . . . to a second side.” *Id.*; ’496 Patent at Cl. 1. Defendants further argue that the Plaintiff’s construction, which the Court adopts, ignores the fact that the term “graded” in the claim term “graded composition” requires a “*gradual* variation” or “*gradual* change” in the composition of the dislocation blocking structure. Resp. Br. at 12 (emphasis added). The Court disagrees.

Defendants concede that “the specification does not provide an explicit definition of ‘graded.’” *Id.* None of the ’496 Patent’s claims require that the dislocation blocking structure’s composition gradually change. Also, the ’496 Patent’s specification mentions “gradual” or any of the lexemes of “gradual” (such as gradually, gradualness, and so on) only twice, both times in the context of gradual changes in *stress*, not *composition* as required in the patent. ’496 Patent at 9:34-40 (“[T]he stress can gradually change between adjacent layers . . . .”); *id.* (“[S]tresses can . . . gradually change from period to period.”).

Defendants cite two passages from the ’496 Patent’s specification to support Defendants’ view that “graded” requires a gradual variation in the *composition* of the dislocation blocking structure. Resp. Br. at 12. The Court addresses each passage in turn.

The first passage states that “the *stress can gradually change* between adjacent layers (e.g., by growing layers having a graded tensile or compressive stress).” ’496 Patent at 9:34-36 (emphasis added). The Court finds that the first passage is inapposite because the passage speaks only of gradual change in the context of layer *stress*, not layer *composition*. *Id.* Nevertheless, even

assuming *arguendo* that the first passage is applicable here, the Court cannot construe the claim term to require that the composition of the dislocation blocking structure *gradually* change across the dislocation blocking structure’s thickness. To do so would constitute a cardinal sin of patent law because “it is improper to read a limitation from the specification into the claims.” *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004). Indeed, claims 1, 7, and 12 (the claims relevant to the construction of “graded composition”) make no mention of the nature by which the dislocation blocking structure’s “graded composition” changes across the thickness of the dislocation blocking structure. Thus, “this court will not countenance the importation of claim limitations from a few specification statements or figures in the claims.” *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008).

The second passage states:

Additionally, the light generating heterostructure 12D is shown including a graded layer 60 located between the dislocation blocking structure 16D and the light generating structure 14. The graded layer 60 can be configured to further reduce stresses in the light generating structure 14. For example, the graded layer 60 can comprise a composition that varies from a composition of an adjacent layer, such as the dislocation blocking structure 16D, located on one side, to a composition of the light generating structure 14 located on the opposite side. The composition grading can be linear or parabolic, with a grading gradient selected to minimize stresses and/or maximize polarization doping. While the graded layer 60 is shown implemented on the n-type side of the light generating structure 14, it is understood that a graded light can be included on the p-type side of the light generating structure 14.

’496 Patent at 11:62-12:5. Defendants cite this second passage to support their view that “graded” requires gradual variation of the composition of the dislocation blocking structure. Resp. Br. at 12. Yet, the second passage never links “graded” to “gradual variation.” In fact, the second passage does not even mention “gradual variation.” Thus, the second passage does not support Defendants’ argument that the composition of the dislocation blocking structure gradually change across the dislocation blocking structure’s thickness. Resp. Br. at 12.

As such, the ’496 Patent does not limit how the graded composition of the dislocation blocking structure varies across the thickness of the dislocation blocking structure. As discussed

above, the Court rejects Defendants’ attempts to require that the graded composition vary *gradually* across the thickness of the dislocation blocking structure. In addition, claims 1, 7, and 12 (all the claims implicated in the construction of the claim term “graded composition”) state that the “graded composition . . . changes from a first side of the dislocation blocking structure to a second side thereof,” but do not specify the manner in which the graded composition changes across the thickness of the dislocation blocking structure. ’496 Patent at Cls. 1, 7, 12.

Similarly, the ’496 Patent does not limit the ways in which the graded composition can vary across the thickness of the dislocation blocking structure. For example, the ’496 Patent’s specification states that the “composition grading can be linear or parabolic.” *Id.* at 12:4-5. Other passages from the specification are less explicit and do not discuss the nature of the composition grading. *See, e.g., id.* at 12:29-32 (“[A] graded junction refers to any graded layer that is inserted between two layers of different composition where the composition of the graded layer transitions from the first layer to the second layer.”); *id.* at 8:38-41 (“[T]he dislocation blocking structure [] can have a graded composition of aluminum with the molar fraction changing” across the thickness of the dislocation blocking structure). However, the Court does not define the composition grading of the dislocation blocking structure to be linear or parabolic because it is “improper to read a limitation from the specification into the claims.” *Microsoft Corp.*, 357 F.3d at 1347.

Nevertheless, Defendants contend that “‘linear’ and ‘parabolic’ gradients are gradual and monotonic changes that meet Defendants’ proposed construction.” Resp. Br. at 13. As support for Defendants’ proposition, Defendants reference page 72 of Exhibit B to the declaration of Defendants’ expert Dr. Russell Dupuis in support of Defendants’ responsive claim construction brief. *Id.* However, Federal Circuit law is unequivocal that “if the meaning of the claim limitation is apparent from the intrinsic evidence alone, it is improper to rely on extrinsic evidence.” *Bell Atlantic*, 262 F.3d at 1268-69. The Court’s discussion of the claims and specification, which are intrinsic evidence, demonstrates that the meaning of the claim term “graded composition” can be

discerned from sole reliance on the intrinsic evidence. Thus, the Court need not, and in fact *may not per Bell Atlantic*, turn to extrinsic sources such as Dr. Dupuis' declaration for clarification.

However, even if the Court were to consider Dr. Dupuis' declaration, the Court would still reject Defendants' proposed construction. According to Dr. Dupuis' declaration, Exhibit B is a "true and correct copy of excerpts from E. Fred Schubert, Light-Emitting Diodes (2d ed. 2006)." ECF No. 61 at ¶ 4. Page 72 of Exhibit B does indeed discuss "parabolic grading." ECF No. 61-2 at 72. However, on page 72, there is no mention of "gradual and monotonic changes," no mention of "linear and parabolic gradients," and no mention of "composition grading." *Id.* Thus, page 72 of Exhibit B does not support Defendants' proposed construction that the composition "gradually and monotonically changes from one side to the opposite site."

### iii. Prosecution History

Defendants argue that the prosecution history, and more precisely, the Chua reference, is proof that the term "'graded' requires a *gradual* change" of the dislocation blocking structure's composition. Resp. Br. at 12 (emphasis added). Plaintiff argues that Defendants misinterpret Chua. Reply at 9. The Court agrees with Plaintiff.

The Chua reference discloses a mixed alloy region "comprised of a continuum of alternating layers of a higher percentage of AlN (again, an 'AlN layer') and a high percentage of GaN (and again, a 'GaN layer')." The thicknesses of the AlN layers gradually decrease from one AlN/GaN pair to the next." ECF No. 62-9 at [0014]. Thus, Chua discloses that the thicknesses of the AlN layers gradually decrease. Although Chua discloses that the "average [aluminum] content of the defect redirection region decreases," *id.*, Chua is inapposite because Chua does not disclose that the average aluminum content *gradually* decreases.

In sum, the Chua reference does not disclose a "*gradual* change" of the dislocation blocking structure's composition.

### b. Summary

The intrinsic evidence, such as the claim language, patent specification, and prosecution

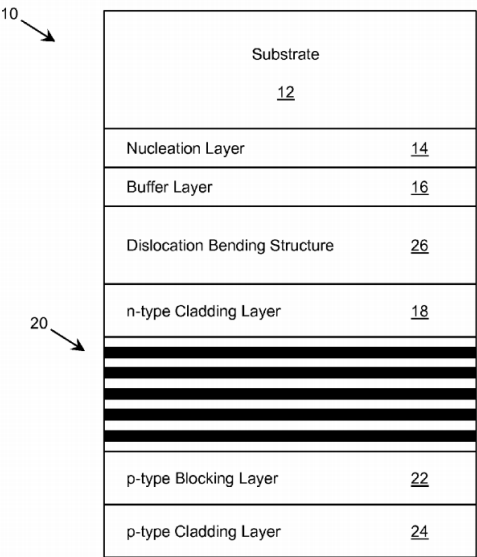
history, all support the Court’s construction of the claim term “graded composition” in claims 1, 7, and 12 of the ’496 Patent as “the composition of the dislocation blocking structure changes across its thickness.”

The Court need not consider extrinsic evidence because the meaning of the claim term “graded composition” is resolvable by reliance on intrinsic evidence. If the meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz*, 284 F.3d at 1373. “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.” *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (internal quotation marks omitted).

**C. ’468 Patent**  
**1. Overview of the ’468 Patent**

The ’468 Patent is entitled “Light Emitting Device with Dislocation Bending Structure.” Dislocations are defects in the crystal structure of a semiconductor layer that can propagate through multiple layers. *See, e.g.*, ’468 Patent at 4:12-16. Dislocations affect the electrical, physical, and mechanical properties of the crystalline solids that comprise semiconductor layers. For instance, dislocations can reduce the light emission of light emitting devices such as light

**FIG. 2**





emitting diodes and laser diodes. *Id.* at 1:28-29, 2:23-24. The goal of the '468 Patent is to reduce dislocations in active regions of emitting devices by introducing a dislocation bending structure into the structure of an emitting device. A dislocation bending structure can be configured to cause dislocations "to bend and/or annihilate prior to reaching the active region." *Id.* at 2:30-34. Moreover, a dislocation bending structure "can include a plurality of layers with adjacent layers being composed of a material, but with molar fractions of an element in the respective material differing between the two layers. The dislocation bending structure can include at least forty pairs of adjacent layers having molar fractions of an element differing by at least five percent between the adjacent layers." *Id.* at 2:35-41. Fig. 2 of the '468 Patent is illustrative.

Fig. 2 above is illustrative of the structure of a light emitting diode or a laser diode. *Id.* at 3:65-4:2. While the emitting device (item 10) is operating, an active region (item 20) of the emitting device (item 10) emits electromagnetic radiation of potentially many different wavelengths, such as visible light, ultraviolet radiation, or infrared light. *Id.* at 4:2-8. The emitting device (item 10) can be comprised of a substrate (item 12), a nucleation layer (item 14), a buffer layer (item 16), an n-type cladding layer (item 18), an active region (item 20), a p-type blocking layer (item 22), and a p-type cladding layer (item 24). *Id.* at 4:9-12.

The emitting device (item 10) depicted in Fig. 2 also contains a dislocation bending structure (item 26) located between the substrate (item 12) and the active region (item 20). *Id.* at 4:19-21. As aforementioned, the dislocation bending structure can cause dislocations originating from the substrate (item 12) to bend or partially annihilate due to strain before the dislocations propagate to the active region (item 20). *Id.* at 2:30-34, 4:21-24. The dislocation bending structure (item 26) can be comprised of multiple layers, wherein layers of the dislocation bending structure (item 26) can vary in material composition. *Id.* at 4:26-28. Such layers in the dislocation bending structure (item 26) can also be periodic. *Id.* at 4:33-36. For instance, each period can be composed of "two layers of different [material] compositions." *Id.* The dislocation bending structure (item 26) could comprise multiple periods. *Id.*

The parties request construction of two terms: (1) “[t]he difference in the molar fractions is selected on a thickness of at least one of the first layer or the second layer” (found in claim 14); and (2) “[t]he material” (found in claim 26). Below, the Court addresses each claim term in turn.

**2. “the difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer”**

<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
Plain and ordinary meaning	Indefinite

The claim term “the difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer” appears in claim 14. Claim 14 depends from independent claim 11.

Claim 14 of the ’468 Patent recites:

14. The emitting device of claim 11, wherein the **difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer.**

’468 Patent at Cl. 14 (emphasis added).

Claim 11 of the ’468 Patent recites:

11. An emitting device comprising:

a substrate;

an active region located on a first side of the substrate; and

a dislocation bending structure located between the substrate and the active region, wherein the dislocation bending structure comprises a means for causing at least some dislocations propagating from the substrate to at least one of: bend or annihilate, prior to reaching the active region, and wherein the means for causing includes a plurality of non-overlapping periods, wherein each period includes:

a first layer composed of a material including an element; and

a second layer composed of a material including the element, wherein a molar fraction of the element differs for the first layer and the second layer by at least five percent.

’468 Patent at Cl. 11.

Plaintiff proposes the plain and ordinary meaning of the claim term “the difference in the

molar fractions is selected based on a thickness of at least one of the first layer or the second layer.” Opening Br. at 15. Defendants argue that claim 14 is indefinite. Resp. Br. at 16. For the reasons discussed below, the Court agrees with Defendants and concludes that claim 14 is indefinite.

i. Indefiniteness

Defendants argue that claim 14 is indefinite because claim 14, which “recites the emitting device of claim 11,” depends from claim 11, but claim 14 adds a step that is “highly uncertain.” Resp. Br. at 15. Moreover, Defendants argue that claim 14 is indefinite because what is claimed are functions or features of the product without any information on how to make the product. *Id.* On the other hand, Plaintiff argues that claim 14 is not indefinite and is a proper product-by-process claim wherein the claim recites “a process for making a product.” Opening Br. at 14-15. Plaintiff also asserts that the primary case upon which Defendants rely, *In re Downing*, 754 Fed. App’x 988 (Fed. Cir. 2018), is inapposite. Reply at 10-11. Defendants have the more compelling argument.

In the seminal case on indefiniteness, the United States Supreme Court held that “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus*, 572 U.S. at 901. Claim language that employs a “term of degree” is not inherently indefinite. *Interval Licensing*, 766 F.3d at 1370. Nonetheless, the patent must provide “some standard for measuring that degree” so that the claim language provides “enough certainty to one of skill in the art when read in the context of the invention” in the form of “objective boundaries.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378, 1381 (Fed. Cir. 2015), *cert. denied*, 136 S. Ct. 569 (2015). Claim language that includes a term of degree is indefinite if the claim language is “highly subjective,” lacks “objective boundaries,” or depends on the “unpredictable vagaries of any one person’s opinion.” *See, e.g., Interval Licensing*, 766 F.3d at 1371. Below, the Court first explains how the claim term is a term of degree, and then discusses

1 how the term of degree renders claim 14 indefinite.

2 First, the Court finds that the claim term “the difference in the molar fractions is selected  
3 based on a thickness of at least one of the first layer or the second layer” is a term of degree.  
4 Admittedly, the Court has yet to find a clear, unambiguous Federal Circuit pronouncement  
5 defining “term of degree.” Nevertheless, there are sufficient numbers of Federal Circuit opinions,  
6 upon which the Court relies, to buttress this Court’s conclusion that the claim term is a term of  
7 degree.

8 For example, the Federal Circuit stated that “purified” is a “term of degree” because  
9 “‘purified’ . . . inherently requires an evaluation of that degree in order to be defined precisely.”  
10 *Evans Med. Ltd. v. Am. Cyanamid Co.*, 215 F.3d 1347, at \*5 (Fed. Cir. 1999). Analogously, in the  
11 instant case, the claim term requires evaluations of the thicknesses of the first and second layers,  
12 the selected difference of the molar fractions, and the relationship between layer thickness and the  
13 difference in the molar fractions, before the claim term can be defined with precision.

14 Moreover, the Federal Circuit has held that “reduced area of contact” is a term of degree  
15 because “reduced area of contact . . . necessarily calls for a comparison against some baseline,”  
16 such as “what the area of contact has been reduced *from*.” *Liberty Ammunition, Inc. v. United*  
17 *States*, 835 F.3d 1388, 1395-96 (Fed. Cir. 2016) (emphasis in original). Likewise, here, the claim  
18 term “the difference in the molar fractions is selected based on a thickness of at least one of the  
19 first layer or the second layer” also calls for a comparison against a baseline because the claim  
20 term raises the questions of: the amount of difference that exists in the molar fractions; the  
21 relationship between the difference in molar fractions and the thicknesses of the first and second  
22 layers; who selects the difference in the molar fractions; and what the criteria are for the selection  
23 of the difference in molar fractions.

24 In addition, the Federal Circuit appeal in *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*  
25 concerned a patent claiming a process for curing fresh tobacco that reduces the amount of  
26 carcinogens in cured tobacco produced during the curing process. 537 F.3d 1357, 1361 (Fed. Cir.

2008). Fresh tobacco must be cured before the tobacco is ready for consumption, such as in cigarettes. *Id.* Microbes are present on tobacco undergoing curing. *Id.* Such microbes normally operate under aerobic conditions, which means that the microbes “consume oxygen in the atmosphere for their energy source.” *Id.* at 1372. However, the curing process reduces the amount of ambient atmospheric oxygen available so that the microbes must operate under anaerobic conditions (i.e., without consuming ambient atmospheric oxygen). *Id.* at 1361. Microbes operating under anaerobic conditions produce the carcinogens that the *Star Scientific* patent seeks to reduce, whereas microbes operating aerobically do not produce such carcinogens. *Id.* Thus, the patent claims, *inter alia*, that tobacco is cured in a “controlled environment” with “an airflow sufficient to substantially prevent an anaerobic condition.” *Id.* at 1364.

The Federal Circuit held that the claim term “anaerobic condition” is a “term of degree because its bounds depend on the degree of oxygen deficiency” in the claimed controlled environment. *Id.* at 1372. In other words, “anaerobic condition” is a term of degree because whether an “anaerobic condition” exists depends on the “degree of oxygen deficiency,” a measurable property. *Id.* Analogously, here, the claim term is also a term of degree. Specifically, like in *Star Scientific*, the degree of the “difference in the molar fractions” is determined based upon a measurable property: the thicknesses of either or both of the first layer and second layer that are selected.

In sum, in view of the analogous and controlling Federal Circuit opinions above, the claim term “the difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer” is a term of degree.

Second, the Court finds that the claim term “the difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer” renders claim 14 indefinite because terms of degree that depend on the “unpredictable vagaries of any one person’s opinion” are indefinite. *Interval Licensing*, 766 F.3d at 137. Here, the intrinsic evidence fails to disclose *any* criteria for how one might “select” a thickness of either or both of the layers, ’468

Patent at Cl. 14, as to affect the molar fraction of an element within the composition of the first or second layers, *id.* at Cl. 11. Therefore, not only is the selection of a layer thickness left up to opinion, the '468 Patent's specification lacks any "objective boundaries" for selection of the thickness of either or both of the layers.

Likewise, the Federal Circuit has held that the term "minimal redundancy" rendered a claim indefinite. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018). The Federal Circuit so held because the evidence failed to "determine an objective boundary of 'minimal.'" *Id.* Similarly, here, the intrinsic evidence does not disclose any objective boundaries to the "difference in the molar fractions" and the thicknesses of the first and second layers. Therefore, claim 14 provides no guidance as to what "difference in the molar fractions" or "thickness of at least one of the first layer or the second layer" give rise to liability for infringing claim 14. Controlling Federal Circuit law states that "a claim is indefinite if a skilled artisan cannot determine if an accused product infringes or not." *Star Scientific*, 537 F.3d at 1372 (Fed. Cir. 2008). Therefore, the claim term and claim 14 of the '468 Patent are indefinite.

Here, the Court's indefiniteness determination only relies upon intrinsic evidence. If a claim is indefinite based "only on intrinsic evidence," the Federal Circuit has held that it is "unnecessary to rely on . . . extrinsic evidence." *Interval Licensing*, 766 F.3d at 1370 n.6. Therefore, the Court finds that claim 14 is indefinite and thus unenforceable.

### 3. "the material"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
Refers back to the recitations: "a first layer composed of a material" and "a second layer composed of a material" for antecedent basis, i.e., the first layer and second layer are both aluminum gallium nitride	Indefinite

The claim term "the material" appears in claim 26. Claim 26 depends from independent claim 11.

Claim 26 of the '468 Patent recites:

26. The emitting device of claim 11, wherein **the material** is aluminum gallium nitride and wherein the element is aluminum.

'468 Patent at Cl. 26 (emphasis added).

Claim 11 of the '468 Patent recites:

11. An emitting device comprising:

a substrate;

an active region located on a first side of the substrate; and

a dislocation bending structure located between the substrate and the active region, wherein the dislocation bending structure comprises a means for causing at least some dislocations propagating from the substrate to at least one of: bend or annihilate, prior to reaching the active region, and wherein the means for causing includes a plurality of non-overlapping periods, wherein each period includes:

a first layer composed of a material including an element; and

a second layer composed of a material including the element, wherein a molar fraction of the element differs for the first layer and the second layer by at least five percent.

'468 Patent at Cl. 11.

Plaintiff only addresses whether claim 26 is indefinite and does not provide a construction for the claim term. Opening Br. at 15. Defendants argue that the claim term is indefinite. Resp. Br. at 16. For the reasons discussed below, the Court agrees with Defendants and finds that claim 26 is indefinite because the claim recites an indefinite claim term.

i. Indefiniteness

A claim is “indefinite if a [claim] term does not have proper antecedent basis.” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008). For a claim term to have antecedent basis support, an indefinite article (for instance, “a” or “an”) must precede a claim term the first time the claim term is used in the claims. Subsequent references in the claims to the claim term must be preceded by a definite article (for instance, “the” or “said”). *See generally Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (discussing the role of indefinite and definite articles in establishing proper antecedent basis). Antecedent basis is necessary so that those with skill in the art can ascertain the scope of a

patent and its claimed inventions with “reasonable certainty.” *Nautilus*, 572 U.S. at 910. For the reasons below, the Court concludes that the claim term “the material” in claim 26 lacks proper antecedent basis.

Claim 26 depends from independent claim 11. Antecedent basis for a claim term in a dependent claim, such as claim 26, may be found in the dependent claim itself. *In re Downing*, 754 Fed. App’x 988, 990-91 (Fed. Cir. 2018) (looking for an antecedent basis for a claim term in the same claim in which the claim term appears). Antecedent basis can also be found in the independent claim from which the dependent claim depends, such as claim 11. *Automed Techs., Inc. v. Microfil, LLC*, 244 Fed. App’x 354, 359 (Fed. Cir. 2007) (searching for antecedent basis for a dependent claim’s claim term in the independent claim from which the dependent claim depends).

The claim term “the material” in claim 26 must have an antecedent basis because “material” is immediately preceded by the definite article “the.” *Id.* at 359 (“[C]laim term employing definite article ‘the’ . . . requir[es] an antecedent basis.”) (citing *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1306 (Fed. Cir. 2005)). However, claim 26 does not provide an antecedent basis for the claim term because claim 26 does not disclose “a material” to which the claim term can refer. Thus, the Court turns to independent claim 11 to determine if claim 11 provides an antecedent basis.

Indeed, claim 11 discloses “a first layer composed of *a material*” and “a second layer composed of *a material*.” ’468 Patent at Cl. 11 (emphasis added). However, the appearance of an antecedent basis in claim 11 is wholly illusory. Claim 11 does not supply the antecedent basis for “the material” because claim 11 mentions “a material” twice, first in reference to “a first layer composed of a material,” and second in reference to “a second layer composed of a material.” Therefore, it is ambiguous whether the claim term “the material” refers to “a first layer composed of a material,” or “a second layer composed of a material,” or both.

The Federal Circuit’s opinion in *Baldwin* is instructive. *Baldwin Graphic Sys., Inc. v.*



*Siebert, Inc.*, 512 F.3d 1338 (Fed. Cir. 2008). *Baldwin* states that a claim limitation lacks antecedent basis “where it would be unclear as to what element the limitation was making reference.” *Id.* at 1343. For instance, “if two different levers are recited earlier in [a] claim, the recitation of ‘said lever’ in the same or subsequent claim would be unclear where it is uncertain which of the two levers was intended.” *Id.* Here, akin to *Baldwin*’s recitation of two different levers, claim 11 recites two different instances of “a material,” once in relation to the composition of a “first layer,” and the other in relation to the composition of a “second layer.” Thus, it is unclear as to which of claim 11’s two recitations of “a material” is referred to by the claim term “the material.” Similarly, in *Baldwin*, “said lever” could refer to “two different levers . . . recited earlier in [a] claim.” *Id.* Thus, *Baldwin* concluded that there is an “indefiniteness problem.” *Id.* Consequently, here, the claim term “the material” in claim 26 lacks an antecedent basis.

In an attempt to salvage claim 26 from indefiniteness, Plaintiff relies upon embodiments of the ’468 Patent wherein a first layer and a second layer of the semiconductor structure are composed of the same material. Opening Br. at 16-17. Plaintiff cites these embodiments in an attempt to argue that the claim term’s lack of antecedent basis does not introduce ambiguity because the claim term, read in light of such embodiments, must refer to and define the material composition of *both* the first layer and the second layer of claim 11. *Id.* As a result, Plaintiff concludes that claim 11’s first and second layers are composed of the same material. *Id.*

However, Plaintiff’s argument is unavailing. The ’468 Patent’s specification discloses other embodiments in which semiconductor layers, such as the first and second layers of claim 11, are composed of different materials. For instance, the ’468 Patent discloses an embodiment in which “the various layers . . . are formed of group III nitride based materials.” ’468 Patent at 5:55-57. “Illustrative group III nitride materials include AlN, GaN, InN, BN, AlGaN, AlInN, AlBN, InGaN, AlGaInN, AlGaBN, AlInBN, and AlGaInBN . . . .” *Id.* at 5:61-64. Thus, in this embodiment, claim 11’s first layer could be composed of AlN and claim 11’s second layer could be composed of InGaN, which defeats Plaintiff’s argument that claim 11’s first and second layers

are necessarily composed of the same material.

In sum, because the claim term “the material” lacks any antecedent basis, claim 26 is indefinite. *See Halliburton*, 514 F.3d at 1249 (holding that a claim is “indefinite if a [claim] term does not have proper antecedent basis”).

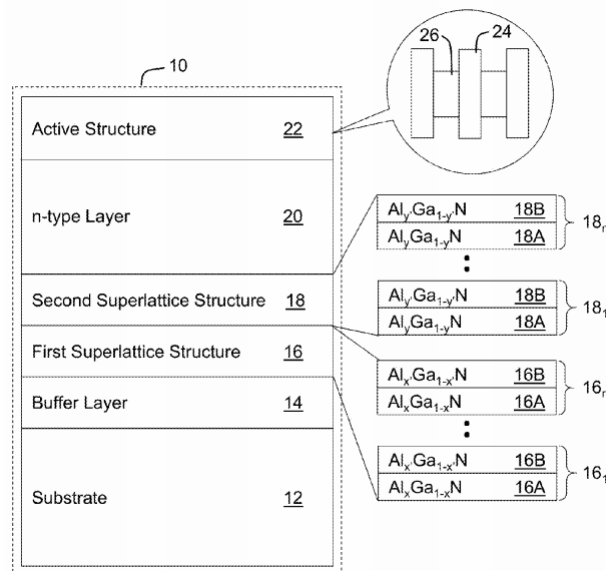
The Court’s indefiniteness determination only relies upon intrinsic evidence. If a claim term is indefinite based “only on intrinsic evidence,” the Federal Circuit has held that it is “unnecessary to rely on . . . extrinsic evidence.” *Interval Licensing*, 766 F.3d at 1370 n.6. Therefore, the Court finds that claim 26 is indefinite and thus unenforceable.

#### D. The ’133 Patent

##### 1. Overview of the ’133 Patent

The ’133 Patent is entitled “Group III Nitride Heterostructure for Optoelectronic Device.” The ’133 Patent is directed to improving the reliability of optoelectronic devices, which are light emitting or light detecting devices such as a light emitting diode, a laser diode, a light sensor, and a photodetector. ’133 Patent at 1:21-23, 3:26-30, 5:45-52. Heterostructures for use within optoelectronic devices can be “configured to improve the reliability of the corresponding optoelectronic device” by, for instance, varying the material composition of different layers in a heterostructure. *Id.* at 3:28-33. A heterostructure refers to different layers of semiconductor

**FIG. 5**



material that, for instance, could be incorporated into an optoelectronic device. *Id.* at 5:16-21. The '133 Patent discloses that the reliability of an optoelectronic device can be improved if certain parameters of a heterostructure are simultaneously optimized. *Id.* at 5:16-18. "These parameters can include: compositional profiles of the semiconductor layers; doping profiles of the semiconductor layers; and thicknesses of the semiconductor layers." The Court finds Fig. 5 illustrative and instructive.

The layers of the heterostructure (item 10) "are formed of group III nitride based materials. Group III nitride materials comprise one or more group III elements (e.g., boron (B), aluminum (Al), gallium (Ga), and indium (In)) and nitrogen (N), such that  $B_W Al_X Ga_Y In_Z N$ , where  $0 \leq W, X, Y, Z \leq 1$ , and  $W+X+Y+Z=1$ ." *Id.* at 6:19-24. W, X, Y, and Z represent the molar fractions of their respective elements boron, aluminum, gallium, indium, and nitrogen. *Id.* at 6:19-25. As relevant to the '133 Patent, the molar fraction of a particular element in a material is equal to the number of moles (a unit of measure) of that particular element in a material divided by the total number of moles of *all* the elements in the material.

During operation of an optoelectronic device, an active structure (item 22) within the heterostructure (item 10) can emit electromagnetic radiation. *Id.* at 5:54-58. The heterostructure depicted in Fig. 5 includes a substrate (item 12), a buffer layer (item 14), a first superlattice structure (item 16), a second superlattice structure (item 18), an n-type layer (item 20), and the active structure (item 22). The first superlattice structure (item 16) may include multiple periods (items 16<sub>1</sub> to 16<sub>n</sub>). *Id.* at 7:12-14. Each period includes two layers (items 16A and 16B). *Id.* In one embodiment, the bottom layer of a period (item 16A) can have a higher aluminum molar fraction than that of the top layer (item 16B) of the period. *Id.* at 7:19-20. Likewise, the second superlattice structure (item 18) is akin to the first superlattice structure (item 16). The second superlattice structure can also include multiple periods (items 18<sub>1</sub> to 18<sub>n</sub>), with each period having two layers (items 18A and 18B) of potentially differing chemical compositions. *Id.* at 7:39-47.

The parties request construction of one claim term: "each period including two layers

formed of group III nitride materials . . . having molar fractions  $x$   $[y]$  and  $x'$   $[y']$ , where  $x > x'$   $[y > y']$ .”

2. “each period including two layers formed of group III nitride materials . . . having molar fractions  $x$   $[y]$  and  $x'$   $[y']$ , where  $x > x'$   $[y > y']$ ”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“The first [second] superlattice includes a repeating pattern of pairs of layers, each layer includes nitrogen, aluminum and another group III element, and the repeating pattern includes repeating the same higher/lower aluminum molar fraction in each pair”	Indefinite

The claim term appears in claim 19 of the ’133 Patent.

Claim 19 of the ’133 Patent recites:

An optoelectronic device comprising:

a substrate;

a buffer layer located on the substrate, wherein the buffer layer is formed of a group III nitride material including aluminum;

a first superlattice structure located on the buffer layer, wherein the first superlattice structure is formed of a plurality of periods, **each period including two layers formed of group III nitride materials** including aluminum and **having molar fractions  $x$  and  $x'$ , where  $x > x'$** ;

a second superlattice structure located on the first superlattice structure, wherein the second superlattice structure is formed of a plurality of periods, **each period including two layers formed of group III nitride materials** including aluminum and **having molar fractions  $y$  and  $y'$ , where  $y > y'$** ;

a n-type layer located on the second superlattice, wherein the n-type layer is formed of a group III nitride material including aluminum having a molar fraction  $z$ , and wherein  $0.1 < z \leq 0.9$ ; and

an active structure including quantum wells and barriers located on the n-type layer, wherein the quantum wells are formed of a group III nitride material including aluminum having a molar fraction  $q$  and the barriers are formed of a group III nitride material including aluminum having a molar fraction  $b$ , and wherein  $b - q > 0.05$ .

’133 Patent at Cl. 19 (emphasis added).

Plaintiff argues that the claim term should be construed to mean: “The first [second] superlattice includes a repeating pattern of pairs of layers, each layer includes nitrogen, aluminum and another group III element, and the repeating pattern includes repeating the same higher/lower aluminum molar fraction in each pair.” Opening Br. at 17. Defendants argue that the claim term is indefinite. Resp. Br. at 19.

For the reasons discussed below, the Court adopts Defendants’ proposed construction. Thus, the Court finds claim 19 indefinite because the claim term is indefinite. *See, e.g., Lufthansa Technik AG v. Astronics Advanced Elec. Sys. Corp.*, 711 Fed. App’x 638, 638 (Fed. Cir. 2017) (finding a claim to be indefinite when a claim term recited in the claim is indefinite).

i. Indefiniteness

Defendants argue that the claim term is indefinite because the subscripts x, x’, y, and y’ are not defined in the claims, nor are they defined as being the molar fractions of aluminum. Resp. Br. at 20. The Court finds Defendants’ arguments convincing.

Claim 19 discloses that a first superlattice structure contains a plurality of periods, wherein each period has two semiconductor layers “formed of group III nitride materials including aluminum and having molar fractions x and x’ . . . .” ’133 Patent at Cl. 19. Claim 19 also discloses a second superlattice structure containing a plurality of periods, wherein each period including two layers “formed of group III nitride materials including aluminum and having molar fractions y and y’ . . . .” *Id.* It is very unclear from the text of claim 19 as to what subscripts x, x’, y, and y’ refer. For instance, a reasonable interpretation of claim 19 is that the subscripts refer to the molar fraction of a group III nitride material, or that the subscripts are associated with the period including two layers.

At the July 25, 2019 claim construction hearing, Plaintiff’s counsel asserted that the subscripts x, x’, y, and y’ refer to the molar fraction of aluminum. As support for Plaintiff’s counsel’s interpretation of the subscripts in claim 19, Plaintiff’s counsel directed the Court to Fig. 5 and the ’133 Patent at 7:11-47, which is the portion of the specification that describes Fig. 5.

Fig. 5 depicts a semiconductor structure that contains, *inter alia*, a first and a second superlattice structure. '133 Patent at 6:64, 7:11-67. The specification discloses that x and x' correspond to the aluminum molar fractions of two adjacent layers within a first superlattice structure. *Id.* at 7:19-21. Correspondingly, the specification discloses that y and y' correspond to the aluminum molar fractions of two adjacent layers within a second superlattice structure. *Id.* at 7:45-47.

However, the specification is highly inconsistent with regard to how the specification refers to the molar fraction of aluminum. For example, the specification has referred to the molar fraction of aluminum as "z," *id.* at 3:58-59, and "q," *id.* at 3:61-62. The specification uses the subscripts Y, y, and y' for the molar fraction of gallium. *Id.* at 6:34-36.

It is axiomatic that courts must "avoid impermissibly importing limitations from the specification" into the claims. *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361 (Fed. Cir. 2003). Moreover, a claim is indefinite if the specification lacks adequate guidance to give the claim term a "reasonably clear and exclusive definition, leaving the facially subjective claim language without an objective boundary." *Interval Licensing*, 766 F.3d at 1373. Thus, the Court cannot define subscripts x, x', y, and y' as the subscripts appear in claim 19 to represent the molar fraction of aluminum because doing so would impermissibly import limitations from the specification into the claims. Moreover, the '133 Patent's specification does not even consistently use a particular subscript to identify the molar fraction of aluminum. Thus, claim 13 is indefinite because the specification does not provide an exclusive definition of x, x', y, and y'. Even if the specification provided exclusive definitions of the subscripts, use of such definitions would be an improper importation of limitations from the specification into the claim.

Here, the Court's indefiniteness determination only relies upon intrinsic evidence. Nevertheless, if a claim is indefinite based "only on intrinsic evidence," the Federal Circuit has held that it is "unnecessary to rely on . . . extrinsic evidence." *Id.* at 1370 n.6. Therefore, the Court finds that claim 19 is indefinite and thus unenforceable.

#### **E. The '420 Patent**

## 1. Overview of the '420 Patent

The '420 Patent is entitled "Device with Transparent and Higher Conductive Regions in Lateral Cross Section of Semiconductor Layer." The '420 Patent is generally directed toward increasing efficiency of semiconductor emitting devices such as light emitting diodes and laser diodes. '420 Patent at 1:38-45. The '420 Patent notes that inhomogeneities in a semiconductor layer enable conduction channels to develop that increase the electrical conductivity through the semiconductor layer. *Id.* at 3:30-37. Moreover, regions of a semiconductor layer with high aluminum content "allow for low light absorption (e.g., a higher transmission coefficient)." *Id.* at 3:38-40. Thus, the '420 Patent seeks to "achieve a desired balance of higher conduction with reduced light absorption by tailoring semiconductor properties." *Id.* at 3:40-42.

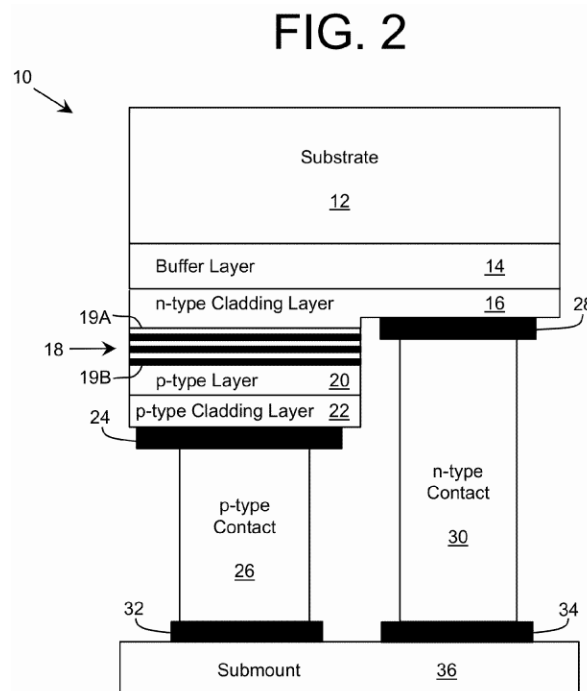


Fig. 2 is helpful for understanding the '420 Patent. Fig. 2 depicts an emitting device (item 10). *Id.* at 6:5-6. When the emitting device is operated, the active region (item 18) emits electromagnetic radiation. *Id.* at 6:11-14. The emitting device includes a heterostructure that

comprises a substrate (item 12), a buffer layer (item 14), an n-type cladding layer<sup>2</sup> (item 16), and an active region (item 18) with an n-type side (item 19A). *Id.* at 6:24-28. The heterostructure also includes a p-type layer<sup>3</sup> (item 20) adjacent to the p-type side (item 19B) of the active region (item 18) as well as a p-type cladding layer (item 22) adjacent to the p-type layer (item 20). *Id.* at 6:29-33.

A superlattice structure can be a layer within a heterostructure. *Id.* at 15:17-19. The superlattice structure/layer can be comprised of “periods, each of which is formed from a plurality of sub-layers.” *Id.* In an embodiment, “the p-type cladding layer [item 22] and/or the p-type contact [item 26] can comprise a short period superlattice lattice structure.” *Id.* at 7:8-10. In another embodiment, “the n-type cladding layer [item 16] and/or the n-type contact [item 30] can be formed of a short period superlattice . . . which is at least partially transparent to the electromagnetic radiation generated by the active region (item 18). *Id.* at 7:15-20.

The parties request construction of two terms: (1) “short period superlattice” (found in claims 1, 2, 4, 13, 14); and (2) “transparent regions” (found in claims 1 and 13). Below, the Court addresses each claim term in turn.

## 2. “short period superlattice”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“A semiconductor layer with a plurality of barrier sublayers alternating with a plurality well sublayers, where the barriers are thin enough to provide carrier movement through the layer”	“A superlattice having a few-monolayer-thick wells and barriers, in which the barriers are thin enough that carriers tunnel through them”

The claim term “short period superlattice” appears in claims 1, 2, 4, 13, 14. Claims 2, 4, 13, and 14 all depend from independent claim 1.

Claim 1 of the ’420 Patent recites:

1. A device comprising:

<sup>2</sup> An n-type cladding layer can be an electron supply layer. ’420 Patent at 6:26.

<sup>3</sup> A p-type layer can be an electron blocking layer. ’420 Patent at 6:29-30.



a **short period superlattice (SPSL)** semiconductor layer, wherein a composition of at least one barrier in the **SPSL** semiconductor layer varies along lateral dimensions of the at least one barrier such that a lateral cross section of the at least one barrier includes:

a set of transparent regions having a first characteristic band gap, wherein the set of transparent regions are at least ten percent of an area of the lateral cross section of the at least one barrier; and

a set of higher conductive regions having a second characteristic band gap at least five percent smaller than the first characteristic band gap, wherein the set of higher conductive regions are at least two percent of the area of the lateral cross section of the at least one barrier, and wherein lateral inhomogeneities in at least one of: the composition or a doping of the at least one barrier forms the set of transparent regions and the set of higher conductive regions.

'420 Patent at Cl. 1 (emphasis added)

Claim 2 of the '420 Patent recites:

2. The device of claim 1, wherein the **SPSL** semiconductor layer comprises a periodic structure including a plurality of periods, wherein at least one of: a composition or a width of each period varies along the height of the **SPSL** semiconductor layer.

'420 Patent at Cl. 2 (emphasis added).

Claim 4 of the '420 Patent recites:

4. The device of claim 1, wherein at least one barrier in the **SPSL** semiconductor layer has a graded composition.

'420 Patent at Cl. 4 (emphasis added).

Claim 13 of the '420 Patent recites:

13. The device of claim 1, further comprising an inhomogeneous layer directly adjacent to the **SPSL** semiconductor layer, wherein the inhomogeneous layer includes a plurality of transparent regions and a plurality of higher conductive regions.

'420 Patent at Cl. 13 (emphasis added).

Claim 14 of the '420 Patent recites:

14. The device of claim 1, further comprising a semiconductor layer having a graded composition directly adjacent to the **SPSL** semiconductor layer.

'420 Patent at Cl. 14 (emphasis added).

Plaintiff argues that the claim term "short period superlattice" should be construed to

mean: “A semiconductor layer with a plurality of barrier sublayers alternating with a plurality well sublayers, where the barriers are thin enough to provide carrier movement through the layer.” Opening Br. at 19. Defendants argue that the claim term should be construed to mean: “[A] superlattice having a few-monolayer-thick wells and barriers, in which the barriers are thin enough that carriers tunnel through them.” Resp. Br. at 21.

However, before the Court engages with the merits, the Court must address two closely related threshold issues: (1) that Plaintiff’s proposed construction in Plaintiff’s claim construction briefing differs in part from Plaintiff’s proposed construction in the joint claim construction statement; and (2) the reason the Court uses the proposed construction from Plaintiff’s claim construction briefing, not from the joint claim construction statement.

Plaintiff’s proposed construction in the joint claim construction statement is: “A semiconductor layer with a plurality of barrier sublayers alternating with a plurality well sublayers, where the combined thickness of a barrier and well is short (thin).” ECF No. 55 at 9. Plaintiff’s proposed construction in Plaintiff’s claim constructing briefing is: “A semiconductor layer with a plurality of barrier sublayers alternating with a plurality well sublayers, where the barriers are thin enough to provide carrier movement through the layer.” Opening Br. at 19.

Defendants’ responsive claim construction brief acknowledges the shift in Plaintiff’s proposed construction, and sets forth the construction as it appears in the joint claim construction statement. Resp. Br. at 21. Nevertheless, Defendants have not sought to confine Plaintiff’s proposed construction to that which was stated in the joint claim construction statement. Indeed, Defendants even state that “it does not matter” which of Plaintiff’s constructions is used because “neither of [Plaintiff’s] constructions is correct.” Resp. Br. at 21.

Moreover, the Court’s use of Plaintiff’s new proposed construction in Plaintiff’s claim construction briefing comports with the Northern District of California’s jurisprudence. In *Rambus*, the defendants’ proposed constructions of two terms at claim construction shifted from the constructions proposed in the joint claim construction statement. *Rambus Inc. v. Hynix*

*Semiconductor Inc.*, 569 F. Supp. 2d 946, 979-80 (N.D. Cal. 2008). The *Rambus* court, like this Court, adopted the newly-proposed constructions, even though the *Rambus* plaintiff was denied the opportunity to depose the defendants' expert on the defendants' newly-proposed constructions; "such changes in position violate the spirit" of the Patent Local Rules; the defendants' conduct was "not conducive to the orderly progress of [the] case"; and the defendants' revised constructions would "trickle down and affect [the defendants'] construction of 42 of the 72 disputed terms." *Id.* at 980-81. The *Rambus* court adopted the defendants' new constructions because the court was not "willing to ignore the [defendants'] arguments if they help the court to construe the claims in dispute." *Id.* at 981. In addition, another Northern District of California court allowed subsequent "modifications to the parties' proposed claim constructions" in the joint claim construction statement because just as in *Rambus*, the "modifications help[ed] the court construe the disputed terms." *Nomura v. YouTube, LLC*, 2012 WL 6100230, at \*2 (N.D. Cal. Dec. 7, 2012) (citing *Rambus*, 569 F. Supp. 2d at 981).

Likewise, here, Plaintiff's new proposed construction helps the Court construe the claim term because the new construction more narrowly defines the thickness of barriers. Specifically, Plaintiff's old construction in the joint claim construction statement stated that the "thickness of a barrier and well is short (thin)," ECF No. 55 at 9, whereas Plaintiff's new construction in Plaintiff's claim constructing briefing states that "the barriers are thin enough to provide carrier movement," Opening Br. at 19. Plaintiff's old proposed construction used "short (thin)," very vague terms of degree, to describe the thickness of a barrier, whereas Plaintiff's new proposed construction actually states an objectively-measurable property ("thin enough to provide carrier movement") to more narrowly define the thickness of the barrier.

Although *Rambus* and *Nomura* are opinions from 2008 and 2012, respectively, and the Patent Local Rules have since changed, the Court nonetheless views *Rambus* and *Nomura* as persuasive authorities. The Patent Local Rules at the time of *Rambus* and *Nomura* did not explicitly forbid a party from modifying a proposed construction in the joint claim construction

statement. *Nomura*, 2012 WL 6100230, at \*2 (“The [Patent Local Rules] do not speak to modifications to a joint claim construction statement . . . .”); *Rambus*, 569 F. Supp. 2d at 980 (“The Patent Local Rules at the time the [defendants] changed their proposed claim constructions do not explicitly forbid this shift.”). The extant Patent Local Rules, last revised on January 17, 2017, also do not explicitly prohibit a party from changing a proposed construction after the joint claim construction statement is filed. *See generally* Patent L.R. 4 (governing the claim construction process). Thus, this Court is faced with the same lack of guidance from the Patent Local Rules as were the *Rambus* and *Nomura* courts, which nonetheless permitted subsequent changes to proposed constructions in joint claim construction statements based on rationales upon which this Court relies. Thus, Plaintiff’s proposed construction in the claim construction briefing is the construction the Court identifies in the instant order as Plaintiff’s proposed construction. Nonetheless, Plaintiff’s conduct is “not conducive to the orderly progress of this case, and the court disapproves of it.” *Rambus*, 569 F. Supp. 2d at 981. The Court, having addressed the two threshold issues, now turns to the merits of the parties’ arguments.

For the reasons discussed below, the Court partially adopts Plaintiff’s proposed construction. However, the Court’s construction modifies Plaintiff’s proposed construction to be more faithful to the intrinsic evidence. *Homeland Housewares, LLC*, 865 F.3d at 1376 (holding that courts may “adopt a definition not proposed by either party”). Therefore, the Court construes the claim term “short period superlattice” to mean “a semiconductor layer with a plurality of barriers and a plurality of wells, where the barriers are thin enough to provide carrier movement through the semiconductor layer.”

As always, claim construction begins with an examination of the intrinsic evidence, *Gillette Co.*, 405 F.3d at 1370, and “gives primacy to the language of the claims,” *Tempo Lighting, Inc.*, 742 F.3d at 977.

a. Intrinsic Evidence

The Court begins with a discussion of the Court’s construction and how the construction is

supported by the '420 Patent's claim language and specification. The Court then addresses the reasons why the Court does not adopt portions of Plaintiff's proposed construction and Defendants' proposed construction.

i. Claim Language and Specification

The first portion of the Court's construction describes the claim term "short period superlattice" as "a semiconductor layer with a plurality of barriers and a plurality of wells." Claim 1, as do claims 2, 4, 13, and 14, expressly describe the claim term as a "semiconductor layer." *See, e.g.*, '420 Patent at Cl. 1 ("[A] short period superlattice (SPSL) semiconductor layer . . ."); *id.* at Cl. 2 ("[T]he SPSL semiconductor layer . . ."); *id.* at Cl. 4 (same); *id.* at Cl. 13 (same); *id.* at Cl. 14 (same). Moreover, the specification is in accord. *See, e.g., id.* at 3:57 ("[A] short period superlattice (SPSL) semiconductor layer . . ."); *id.* at 4:6-7 ("[A] short period superlattice (SPSL) semiconductor layer . . .").

In addition, the parties agree that the claim term has both barriers and wells. *See* Opening Br. at 19 ("A semiconductor layer with a plurality of barrier sublayers . . . [and] a plurality [of] well sublayers . . ."); Resp. Br. at 21 ("[A] superlattice having . . . wells and barriers . . ."). The Federal Circuit has held that if the parties' proposed constructions or portions of the proposed constructions are synonymous, a court can adopt the synonymous proposed constructions or portions thereof without need for further explication or analysis. *See, e.g., Seal-Flex, Inc. v. Athletic Track & Court Constr.*, 172 F.3d 836, 842 (Fed. Cir. 1999) (acknowledging that a court may adopt an agreed-upon construction without further analysis); *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 2007 WL 9723326, at \*2 (C.D. Cal. Jan. 8, 2007) (adopting only the agreed-upon portions of the parties' otherwise divergent proposed constructions), *aff'd*, 312 Fed. App'x 326 (Fed. Cir. 2009). Thus, the Court adopts the parties' synonymous constructions that the claim term has barriers and wells. Therefore, the claim language, specification, and the parties' proposed constructions support the first portion of the Court's construction: "A semiconductor layer with a plurality of barriers and a plurality of wells."

The remaining portion of the Court’s construction specifies that the “barriers are thin enough to provide carrier movement through the semiconductor layer.” The parties’ proposed constructions both recognize and agree that the thinness of the barriers is a property that should be defined in the construction of the claim term. *See* Opening Br. at 19 (“[T]he barriers are thin enough to provide carrier movement throughout the layer.”); Resp. Br. at 21 (“[T]he barriers are thin enough that carriers tunnel through them.”). Courts may adopt undisputed portions of the parties’ proposed constructions. *Applied Med. Res. Corp.*, 2007 WL 9723326, at \*2 (adopting only the undisputed portions of the parties’ otherwise divergent proposed constructions). Thus, the Court’s construction references and defines the thinness of the barriers.

Moreover, the ’420 Patent supports the Court’s construction that barriers must “provide carrier movement through the semiconductor layer.” Specifically, claim 1 discloses that barriers in the semiconductor layer contain “higher conducive regions.” ’420 Patent at Cl. 1. Moreover, the specification states that carriers use such higher conductivity regions (created by barriers as claim 1 discloses) to travel through the semiconductor layer. *Id.* at 12:9-18. Therefore, the ’420 Patent supports the Court’s construction that barriers “provide carrier movement through the semiconductor layer.”

In sum, the ’420 Patent’s claim language and specification support the Court’s construction of the claim term “short period superlattice” as “a semiconductor layer with a plurality of barriers and a plurality of wells, where the barriers are thin enough to provide carrier movement through the semiconductor layer.”

#### ii. The Court Does Not Adopt Parts of Plaintiff’s Proposed Construction

Plaintiff’s proposed construction is: “A semiconductor layer with a plurality of barrier sublayers alternating with a plurality well sublayers, where the barriers are thin enough to provide carrier movement through the layer.” Opening Br. at 19. As stated above, the Court partially adopts Plaintiff’s proposed construction. Notably, the Court’s construction removed mention of barriers *alternating* with wells and removed mention of “sublayers” (i.e., “barrier sublayers” and

“well sublayers”).

The Court’s construction omits mention of barriers alternating with wells because some of the embodiments described in the ’420 Patent do not appear to disclose barriers alternating with wells. For instance, multiple embodiments in the ’420 Patent describe a “short period superlattice (SPSL) semiconductor layer comprising a plurality of barriers,” but never mention wells or disclose the spatial arrangement between barriers and wells. *See, e.g.*, ’420 Patent at 3:46-4:4, 4:5-4:18. The Federal Circuit rejects claim constructions that “exclude[] embodiments disclosed in the specification” or embodiments disclosed in the figures. *Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1353-55 (Fed. Cir. 2006). Thus, the Court’s construction does not state that the barriers alternate with wells.

Moreover, the Court’s construction omits mention of “sublayers.” Plaintiff’s proposed construction mentions “barrier sublayers” and “well sublayers.” The ’420 Patent does not mention “sublayer(s),” but does mention “sub-layer(s)” six times, all of which appear in three consecutive sentences in the same paragraph. ’420 Patent at 15:19-27. None of these six references to “sub-layer” appears in the context of a description of a barrier or a well. Instead, the ’420 Patent claims simply state “barrier” or “well.” *See, e.g., id.* at Cl. 1. Claim construction “gives primacy to the language of the claims,” *Tempo Lighting, Inc.* 742 F.3d at 977; thus, this Court’s construction does not make reference to “sublayer(s)” or “sub-layer(s).”

### iii. The Court Does Not Adopt Defendants’ Proposed Construction

Defendants’ proposed construction is: “A superlattice having a few-monolayer-thick wells and barriers, in which the barriers are thin enough that carriers tunnel through them.” Defendants’ proposed construction is unsupported by intrinsic evidence. In fact, Defendants’ discussion of the claim term “short period superlattice” fails to cite *any* piece of intrinsic evidence. *See generally* Resp. Br. Quite tellingly, Defendants begin their argument in support of their proposed construction with a section entitled “Extrinsic evidence supports Defendants’ construction of this term of art.” *Id.* at 21.

Federal Circuit law is unequivocal that “if the meaning of the claim limitation is apparent from the intrinsic evidence alone, it is improper to rely on extrinsic evidence.” *Bell Atlantic*, 262 F.3d at 1268-69; *see also, e.g., Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (“[R]eliance on extrinsic evidence to interpret claims is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.”); *Mantech Envtl. Corp. v. Hudson Envtl. Servs, Inc.*, 152 F.3d 1368, 1373 (Fed. Cir. 1998) (“[W]hen the intrinsic evidence is unambiguous, it is improper for the court to rely on extrinsic evidence for purposes of claim construction.”). Here, Defendants fail to identify any ambiguity within the intrinsic evidence or fail to show that the meaning of the claim term is not apparent from the intrinsic evidence alone. In fact, the Court has demonstrated above that it is entirely possible to rely upon the ’420 Patent’s claims and specification to construe the claim term.

Strangely, Defendants rely upon: a patent application by, among others, “some of the same inventors listed on the ’420 patent”; the ’496 Patent *sub judice*; and the ’133 Patent *sub judice*. Defendants provide no explication of how any of the above sources, which do not share a common specification or have any relation to the ’420 Patent, pertain to the construction of the ’420 Patent. Resp. Br. at 22. Moreover, Defendants rely extensively upon the declaration of a technical expert, Dr. Russell Dupuis, in support of Defendants’ proposed construction. According to Defendants, Dr. Dupuis believes that “short period superlattice is a term of art that has a well-established meaning: a superlattice with layers only a few monolayers thick.” *Id.* at 23. Dr. Dupuis also asserts that the “crucial difference” between a regular superlattice and a short period superlattice is that the short period superlattice “amply allows carrier tunneling through its barrier layers.” *Id.*

The Federal Circuit has dealt with an analogous situation in which a district court “relied on extrinsic evidence in the form of a declaration by [defendant’s] expert to support its construction.” *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 832 (Fed. Cir. 2003). The Federal Circuit rejected the district court’s construction because consideration of “extrinsic evidence is appropriate only when an ambiguity remains after consulting the intrinsic evidence of



record.” *Id.* Moreover, the Federal Circuit also found that the district court improperly used the extrinsic evidence to “limit claim scope.” *Id.*

Here, Defendants’ reliance on Dr. Dupuis is clearly inappropriate. Much like the district court in *Storage Technology Corp.*, Defendants rely upon Dr. Dupuis’ expert opinions without any consideration of whether the intrinsic record is ambiguous. Indeed, Defendants’ proposed construction, which states in part that the wells and barriers of a superlattice are a “few-monolayer-thick,” appears to have been derived from Dr. Dupuis’ opinion that “‘short period superlattice’ is a term of art that has a well-established meaning: a superlattice with layers only a few monolayers thick.” Resp. Br. at 21, 23. Similarly, Defendants’ proposed construction states in part that “the barriers are thin enough that carriers tunnel through them,” which also appears to have been derived from Dr. Dupuis’ opinion that the “crucial difference” between a regular superlattice and a short period superlattice is that the latter “amply allows carrier tunneling through its barrier layers.” *Id.* at 23.

In sum, Defendants’ proposed construction impermissibly relies upon extrinsic evidence without Defendants ever having considered whether the intrinsic record is ambiguous. Thus, the Court does not adopt Defendants’ proposed construction.

#### b. Summary

The intrinsic evidence, such as the claim language and patent specification, all support the Court’s construction of the claim term “short period superlattice” in claims 1, 2, 4, 13, and 14 of the ’420 Patent as “a semiconductor layer with a plurality of barriers and a plurality of wells, where the barriers are thin enough to provide carrier movement through the semiconductor layer.”

The Court need not consider extrinsic evidence because the meaning of the claim term “short period superlattice” is resolvable by reliance on intrinsic evidence. If the meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz*, 284 F.3d at 1373. “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of the

intrinsic evidence.” *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (internal quotation marks omitted).

### 3. “transparent regions”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning, or in the alternative, “regions of the barrier that permit light at or near a target wavelength to pass through”	Indefinite. In the alternative: “distinct regions that have a transmission coefficient of at least 50% for a target wavelength”

The claim term “transparent regions” appear in claims 1 and 13. Claim 13 depends from independent claim 1.

Claim 1 of the ’420 Patent recites:

1. A device comprising:

a short period superlattice (SPSL) semiconductor layer, wherein a composition of at least one barrier in the SPSL semiconductor layer varies along lateral dimensions of the at least one barrier such that a lateral cross section of the at least one barrier includes:

a set of **transparent regions** having a first characteristic band gap, wherein the set of **transparent regions** are at least ten percent of an area of the lateral cross section of the at least one barrier; and

a set of higher conductive regions having a second characteristic band gap at least five percent smaller than the first characteristic band gap, wherein the set of higher conductive regions are at least two percent of the area of the lateral cross section of the at least one barrier, and wherein lateral inhomogeneities in at least one of: the composition or a doping of the at least one barrier forms the set of **transparent regions** and the set of higher conductive regions.

’420 Patent at Cl. 1 (emphasis added)

Claim 13 of the ’420 Patent recites:

13. The device of claim 1, further comprising an inhomogeneous layer directly adjacent to the SPSL semiconductor layer, wherein the inhomogeneous layer includes a plurality of **transparent regions** and a plurality of higher conductive regions.

’420 Patent at Cl. 13 (emphasis added).

Plaintiff argues that the claim term “transparent regions” should be given its plain and ordinary meaning, or in the alternative, construed to mean: “regions of the barrier that permit light

1 at or near a target wavelength to pass through.” Opening Br. at 21. Defendants argue that the claim  
2 term is indefinite, or in the alternative, construed to mean: “distinct regions that have a  
3 transmission coefficient of at least 50% for a target wavelength.” Resp. Br. at 23.

4 Once again, Plaintiff’s proposed construction in the claim construction briefing differs  
5 from Plaintiff’s proposed construction in the joint claim construction statement. Plaintiff’s  
6 proposed construction in the joint claim construction statement is: “regions of the barrier that  
7 permit light at or near the wavelength produced by the device to pass through.” ECF No. 55-1 at  
8 25. Plaintiff’s proposed construction in the claim construction briefing is: “regions of the barrier  
9 that permit light at or near a target wavelength to pass through.” Note that both proposed  
10 constructions are alternative constructions to Plaintiff’s proposed plain and ordinary meaning  
11 construction, which this Court rejects.

12 The Court finds that Plaintiff’s proposed construction in the claim construction briefing  
13 should be adopted because the claim construction briefing construction is narrower than the  
14 construction in the joint claim construction statement. Specifically, instead of allowing some  
15 unspecified wavelength of the light to pass through the barrier, Plaintiff’s proposed construction in  
16 the claim construction briefing specifies that it is a “*target* wavelength” that can pass through the  
17 barrier. Thus, again, the Court permits subsequent modification of a proposed claim construction  
18 because the modified construction helps “the court to construe the claims in dispute.” *Rambus*,  
19 569 F. Supp. 2d at 981.

20 For the reasons discussed below, the Court adopts Plaintiff’s alternative proposed  
21 construction and finds that claims 1 and 13 are not indefinite. Therefore, the Court construes the  
22 claim term “transparent regions” to mean “regions of the barrier that permit light at or near a target  
23 wavelength to pass through.”

24 As always, claim construction begins with an examination of the intrinsic evidence,  
25 *Gillette Co.*, 405 F.3d at 1370, and “gives primacy to the language of the claims,” *Tempo Lighting*,  
26 *Inc.*, 742 F.3d at 977.

a. Intrinsic Evidence

The Court addresses: (1) how the claim language and specification support the Court’s construction; (2) why the Court rejects Defendants’ alternative construction; (3) why Defendants’ criticisms of Plaintiff’s construction, which the Court adopts, are meritless; and (4) why claims 1 and 13 are not indefinite.

i. Claim Language and Specification

The Court’s construction is well-supported by the claim language and specification. For instance, the Court’s construction begins with a reference to “regions of the barrier.” Claim 1 states in part that the “at least one barrier includes . . . a set of transparent regions.” ’420 Patent at Cl. 1. The specification is in accord. For example, the written description states that “barriers can include [] transparent regions.” *Id.* at 3:51-52. Thus, the claim language and the specification both support the Court’s construction that the claim term is part of the barrier. The Court’s construction then states that these regions of the barrier “permit light at or near a target wavelength to pass through.” Once again, the claim language supports this portion of the Court’s construction. Specifically, claim 7, which depends from claim 1, recognizes that the transparent regions of the barrier as disclosed in claim 1 may transmit “radiation of a target wavelength.” *Id.* at Cl. 7. Likewise, the specification discloses that a “barrier includes[] a set of transparent regions” that allow “a target radiation wavelength” to pass through the transparent regions. *Id.* at 3:60-63. Similarly, the specification also states that there are “layers [of the semiconductor structure] with [] regions configured to facilitate the transmission of radiation through the layer.” *Id.* at 3:46-48. Therefore, the ’420 Patent’s claim language and specification are wholly consistent with and supportive of the Court’s construction: “regions of the barrier that permit light at or near a target wavelength to pass through.”

ii. Defendants’ Alternative Construction and Criticism of the Construction are Unfounded

The claims and specification do not support Defendants’ alternative construction, which states: “distinct regions that have a transmission coefficient of at least 50% for a target

wavelength.” Resp. Br. at 23. “Transmission coefficient” is expressly defined in the specification, which explains that a region with “low light absorption” has a “higher transmission coefficient.” *Id.* at 3:35-45. In other words, more light can pass through regions with higher transmission coefficients, and less light can pass through regions with lower transmission coefficients. Although “transmission coefficient” is defined, the Court cannot adopt Defendants’ alternative construction, which states that a region “has a transmission coefficient of at least 50% for a target wavelength.” Defendants have improperly imported limitations from the specification that relate to the 50% transmission coefficient. *See, e.g., Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1354 (Fed. Cir. 2012) (“[A] claim construction must not import limitations from the specification into the claims.”). Specifically, the ’420 Patent’s specification states: “In a more *particular embodiment*, the transparent regions comprise a transmission coefficient for radiation of a target wavelength higher than approximately fifty percent . . . .” ’420 Patent at 9:61-63 (emphasis added). Thus, the Court rejects Defendants’ alternative construction, which seems to have randomly plucked a particular embodiment from the ’420 Patent’s specification to define the claim term.

Furthermore, Defendants assert that because “claims 1 and 13 are not limited to a light-emitting device” based on the claims’ preambles, the construction adopted by the Court, which discloses “light at or near a target wavelength,” is nonsensical. Resp. Br. at 24. Defendants are correct that claim 1’s preamble does not explicitly disclose a light-emitting device, but rather, simply discloses “[a] device.” However, the “purpose of a preamble is to set forth the general nature of the invention being claimed.” *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 753 (Fed. Cir. 2016). If a preamble “offers no distinct definition of any of the claimed invention’s limitations, . . . then the preamble is of no significance to claim construction.” *Pitney Bowes*, 182 F.3d at 1305. Claims 1 and 13’s preambles do not define any of the limitations recited in the body of the claims, and none of claim 1 and 13’s limitations rely on the preamble for meaning because none of the limitations refer to the preambles’ “device.” Thus, the preamble “is

of no significance to claim construction.” *Id.*

However, the broad preamble certainly does not *exclude* the possibility that the “device” can be characterized as light-emitting. Indeed, the elements of claim 1 suggest that the “device” disclosed by claim 1’s preamble relate to light emission. For instance, claim 1 discloses a “short period superlattice (SPSL) semiconductor layer” with barriers that include “a set of transparent regions.” ’420 Patent at Cl. 1. As discussed above, the Court construes “transparent regions” as “regions of the barrier that permit light at or near a target wavelength to pass through.” Therefore, claim 1’s “device” is associated with light emission.

### iii. Why Claims 1 and 13 are Not Indefinite

The Court rejects Defendants’ position that claims 1 and 13 are indefinite because a skilled artisan would understand, with reasonable certainty, the scope of the invention.

The United States Supreme Court has held that if a claim, “viewed in light of the specification and prosecution history, inform[s] those skilled in the art about the scope of the invention with reasonable certainty,” the claim is not indefinite. *Nautilus*, 572 U.S. at 910. In applying the *Nautilus* standard, the Federal Circuit has cautioned that “the dispositive question in an indefiniteness inquiry is whether the ‘claims,’ not particular claim terms” fail the *Nautilus* test. *Cox Commc’ns*, 838 F.3d at 1231. Defendants bear the “burden of proving indefiniteness by clear and convincing evidence.” *BASF Corp.*, 875 F.3d at 1365.

Defendants believe that claims 1 and 13 are indefinite because the claims do not specify exactly which wavelengths of radiation can pass through the “transparent regions” of the device of claim 1. Resp. Br. at 24. Defendants’ argument is without merit. The claims, when viewed in light of the ’420 Patent’s specification, inform those with skill in the art about the scope of the claims with “reasonable certainty.” *Nautilus*, 572 U.S. at 910. For instance, the specification discloses that a potential target wavelength can be “ultraviolet light or deep ultraviolet light.” ’420 Patent at 7:27. In addition, Fig. 11 depicts the absorption of light between 220 nanometers and 340 nanometers as a function of the composition of the barriers. Absorption is simply the inverse of

the transmittance of light, so in effect, Fig. 11 can be interpreted as identifying potential target wavelengths of light. Ultimately, definiteness does not demand “numerical precision.” *Exmark Mfg. Co. v. Briggs & Stratton Power Prod. Grp.*, 879 F.3d 1332, 1346 (Fed. Cir. 2018).

Furthermore, the United States Supreme Court has held that “clear and convincing evidence” means that the evidence must be highly and substantially likely to be true than untrue. *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984). Here, Defendants’ evidence of indefiniteness is essentially the argument that radiation can be of many wavelengths. Resp. Br. at 24. However, Defendants ignore the fact that, as discussed above, the ’420 Patent discloses certain wavelengths of radiation that could be target wavelengths.

In sum, Defendants have failed to meet their burden of proving claims 1 and 13 to be indefinite by clear and convincing evidence.

#### b. Summary

The intrinsic evidence, such as the claim language and patent specification, all support the Court’s construction of the claim term “transparent regions” in claims 1 and 13 of the ’420 Patent as “regions of the barrier that permit light at or near a target wavelength to pass through.”

The Court need not consider extrinsic evidence because the meaning of the claim term “transparent regions” is resolvable by reliance on intrinsic evidence. If the meaning of a claim term “can be resolved from the intrinsic evidence alone, we need not rely on any extrinsic evidence.” *Pickholtz*, 284 F.3d at 1373. “Relying on extrinsic evidence to construe a claim is proper only when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence.” *Interactive Gift Express, Inc.*, 256 F.3d at 1332 (internal quotation marks omitted).

### IV. CONCLUSION

For the foregoing reasons, the Court construes the claim terms as follows.

Patent	Claim Term	Court’s Construction
’965	cover	a cap that seals the case when closed or attached

'965	second compartment defines the volume	the volume includes the second compartment
'496	embedded partially related sublayer	the p-type contact semiconductor layer and/or the n-type contact semiconductor layer includes a semiconductor sublayer that includes dislocations that reduce stress
'496	dislocation blocking structure	This term is governed by 35 U.S.C. § 112(6).  Function: blocking dislocations.  Structure: a layer including alternating compressive and tensile sublayers, as disclosed in the specification at 8:1-9, 8:20-23, 8:37-41, 9:4-40, 9:55-60, 10:2-11, 10:20-11:3, and 11:51-61 and Figs. 7, 8, 9A, 9B, 10A, 10B, 11A, 11B, and 14
'496	graded composition	the composition of the dislocation blocking structure changes across its thickness
'468	the difference in the molar fractions is selected based on a thickness of at least one of the first layer or the second layer	Indefinite
'468	the material	Indefinite
'133	each period including two layers formed of group III nitride materials . . . having molar fractions x [y] and x' [y'], where x>x' [y>y']	Indefinite
'420	short period superlattice	a semiconductor layer with a plurality of barriers and a plurality of wells, where the barriers are thin enough

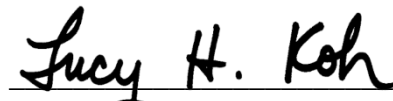


		to provide carrier movement through the semiconductor layer
'420	transparent regions	regions of the barrier that permit light at or near a target wavelength to pass through

Consequently, Court hereby finds that claims 14 and 26 of the '468 Patent and claim 19 of the '133 Patent are invalid and unenforceable for indefiniteness.

**IT IS SO ORDERED.**

Dated: September 24, 2019



LUCY H. KOH  
United States District Judge